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LINGUA

INTERNATIONAL REVIEW OF GENERAL LINGUISTICS
REVUE INTERNATIONALE DE LINGUISTIQUE GÉNÉRALE

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VOLUME VI, 3 April 1957

NORTH-HOLLAND PUBLISHING COMPANY
AMSTERDAM

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AMSTERDAM

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NORTH-HOLLAND PUBLISHING COMPANY
P.O. Box 103 - Amsterdam

STRESS IN ENGLISH WORDS

Summary

This study of *Stress in English Words* seeks to demonstrate that the categories of English word-stress, which are best determined by reference to the Rhythm Patterns of English words, exhibit a high degree of correlation with vowel quality and that their distributional relationships in words can be stated in terms of a few, relatively simple, general principles. In this first half of the study the general thesis is discussed (Chapters I, II and III) and the data, supporting this thesis, are given in respect of Pre-Tonic Rhythmic Stress Patterns (Chapter IV). In the concluding half, which is to appear in LINGUA, Volume VI, 4, the data in respect of Post-Tonic Rhythmic Stress Patterns are set forward (Chapter V), the status of each Rhythmic Stress Pattern is determined (Chapter VI) and the Distributional Relationships of Stress Categories, implicit in the data given in Chapters IV and V, are summarized (Chapter VII).

I. Introduction

1. In recent years increasing attention has been devoted to that complex linguistic problem of stress in English words. Such investigations as have so far been carried out, and especially in America, are usually concerned with the establishment of stress phonemes which are then handled in one of two different ways. For some linguists the stress phonemes are an essential prerequisite for the production of a restricted vowel phoneme inventory. Thus Trager and Bloch, in their *Syllabic Phonemes of English* 1), set up, with respect to their own speech, four stress phonemes, loud, reduced loud, medial and weak, in order subsequently to be able to classify all the vowel qualities found in their speech into six vowel phonemes. In so far as stress is concerned the fundamental aim of an approach such as this is to demonstrate the high degree of correlation which undoubtedly exists between stress and vowel quality in English words. For other linguists the setting-up of stress phonemes is a prelude to the study of their distributional relationships. Stanley S. Newman, for example, in his paper entitled *On the Stress System of English* 2), distinguishes three stress phonemes, heavy, middle and weak, each having two sub-categories; his concern thereafter is to set forward the relations in distribution between his

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1) *Language*, Vol. 17, III, pp. 223–246.

2) *Word*, Vol. 2, No. 3, Dec. 1946, pp. 171–187.

three phonemes and between the two sub-categories of each phoneme.

2. So far as we are aware, no analysis of stress in English words has yet been carried out in which both these attitudes are given equal importance. Trager and Bloch, it is true, envisage the possibility of stating the distributional relationships between stress phonemes, but no attempt is made by them to investigate the matter beyond stating that "medial stress.... is often distributed in relation to the loud stress in a fairly regular way; but there are many exceptions to this regularity" [3]. Newman on the other hand does not undertake the task of correlating vowel quality with his stress phonemes; indeed the question of vowel quality only arises for him in the differentiation of his two varieties of weak stress. It would therefore seem opportune to present a study of stress in English words in a way that allows both these aspects of stress to be given their due importance. We feel furthermore that such a study is not only opportune but indeed essential if we are to arrive at a balanced view of this subject. It seems to us that, if we can combine both aspects of English word stress into a single analysis, many of the irregularities in distribution referred to by Trager and Bloch will turn out to be not so irregular after all; and certainly with some reference to the undoubted correlation between stress and vowel quality, Newman's exposition of the distributional relationships between his heavy and middle stresses could be considerably simplified. Indeed the interplay of vowel quality and distribution features in determining strong stress placement in English words is such that only an exhaustive and simultaneous analysis of both will yield the simplest complete statement of English word stress. It is the aim of this work to attempt such an analysis.

II. STRESS AND RHYTHM

3. Stress in English is regarded by most authorities as the force of articulation with which a syllable is uttered; it is therefore a feature of the syllable [4] and since most, if not all [5], syllables must have some

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[3] *op. cit.*, p. 227.

[4] Compare L. Hjelmslev, (*The syllable as a structural unit*, Proceedings of the Third International Congress of Phonetic Sciences, Ghent, 1935, pp. 266–272) who defines the syllable as a unit of accent placement.

[5] E.g., the pronunciation of *Thank you* as /kkjuː/ where the linguistic strong stress is to be correlated with the initial unexploded voiceless velar stop.

absolute amount of articulatory force, the distinction between stressed and unstressed syllables, to use the customary terminology, lies, not in the presence of stress in the former and its absence in the latter type of syllable, but in the fact that stressed syllables have a *greater* force of articulation than the unstressed ones which have a *weaker* articulatory force. Hence we find in all definitions of stress in English the use of some comparative term to make clear the relative nature of stress; for Bloomfield stress "consists in speaking one of these syllables louder than the other or others" 6); Trager and Bloch look upon stress as "degrees of loudness" 7); Pike says that stress is "a degree of intensity upon some syllable which makes it more prominent or louder than an unstressed syllable" 8); Jones states that "stress is defined as the degree of force with which a.... syllable is uttered" 9). In spite of fundamental differences in linguistic outlook and methods, all these authorities are agreed on the relative character of stress and all proceed from their respective definitions to establish two sharply contrasting categories of stress: strong stress associated with syllables said with a relatively strong articulatory force and weak stress associated with syllables having a relatively weak force of articulation. It is perhaps not surprising that they should agree on this dichotomy which, for the most part, is intuitively felt by all speakers, linguist and non-linguist alike. The fact is that the contrast between strong and weak stress is so marked that the need to draw a hard and fast boundary line between them rarely, if ever, arises; and for that reason, despite their undoubted relative character, strong and weak stress assume for most speakers a quasi-absolute value.

4. Most linguists however seek to carry their investigations into word stress further and to establish other degrees of stress intermediate between strong and weak; and it is here that their erstwhile unanimity disappears. Jones says that "it seems possible to distinguish up to four degrees of stress" but goes on to add that "this number is, however, rarely essential. It is often possible to manage sufficiently well

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6) L. Bloomfield, *Language*, New York, 1933, p. 90.

7) B. Bloch and G. L. Trager, *Outline of Linguistic Analysis*, Baltimore, 1942, p. 35.

8) K. L. Pike, *Phonemics*, University of Michigan Publications, Ann Arbor, 1947, pp. 250 and 63.

9) D. Jones, *Outline of English Phonetics*, Leipzig, 1949, p. 227.

with three degrees, and sometimes even two" [10]). Effectively Jones distinguishes three types of stress, adding one intermediate category, namely his secondary stress, between the strong (or primary or principal) and the weak categories. Bloch and Trager, as we have said, set up four degrees of stress, adding two categories between their strong and weak stresses. Newman has six varieties of stress which he organises into three phonemes, and basically, though more complex than Jones', Newman's system is somewhat similar to that of Jones in that they both establish one major stress category or phoneme between strong and weak.

5. It is instructive at this point to enquire why this disagreement on stress arises as soon as it is a question of differentiating stress categories intermediate between the generally accepted strong and weak classes. For this state of affairs there appear to us to be two important reasons. Firstly with the introduction of just one intermediate degree of stress, the need to establish some sort of boundary line between the various stress types becomes much more pressing. The contrast between strong stress and intermediate stress or between intermediate stress and weak stress is much smaller than that clear contrast between strong and weak stress. A speaker may instinctively feel, for example, that at a given point in an utterance the stress involved is not a weak one; and in a stress system of two classes such negative identification of the strong stress is alone sufficient. But when the choice is between three or more degrees of stress, the elimination of one of those degrees does not in itself make positive identification possible; a further more complicated and less clearly defined contrast between at least two other stress categories has to be considered before any identification is at all possible.

6. The second reason for the disagreement among linguists on the nature and number of the intermediate types of stress is that the criterion employed in the establishment of stress categories varies from linguist to linguist. Indeed in some cases several different criteria are apparently used by the same linguist, criteria which, we are tempted to think, are not strictly consistent with the definition of stress as articulatory force. For Jones, his secondary stress before the principal stress is more important than that which occurs after

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[10] D. Jones, *The Pronunciation of English*, Cambridge University Press, 1956, p. 142.

the principal stress, and consequently in his *English Pronouncing Dictionary* 11), the secondary stress is more consistently marked before the principal stress than after it. A careful study of all entries in EPD strongly suggests that any secondary stress found preceding a principal stress is in reality a principal stress which lacks the pitch prominence always associated with a principal stress. The word *equidistant* for example is given in EPD as either /ˈi:kwiˈdistənt/ or /ˌi:kwiˈdistənt/: in the former pronunciation the initial syllable is accorded a principal stress, indicating here a relatively high level and prominent pitch, whilst in the latter form the same syllable has a secondary stress, signifying a relatively low level and non-prominent pitch. If both versions are said normally, that is with a falling nuclear tone on the third syllable, the articulatory force of the initial syllable is clearly greater than that of the second syllable (which has weak stress) and, more important, it is weaker than that of the third syllable *in both cases*. That the initial syllable, in both pronunciations, appears to be weaker than the third is attributable, we are convinced, to the prejudicial effect that the nuclear tone, here occurring on the third syllable, can have on our judgment of stress 12); as Newman so rightly says: "Syllables with nuclear heavy stress or 'nucleus tones' are perceived so strongly intense that all other syllables fade to an equal or nearly equal level" 13). If, however, to overcome such prejudices, we replace the normal pitch patterns by a monotone in both pronunciations of *equidistant*, we find, not only that the stresses on the first and third syllables of /ˈi:kwiˈdistənt/ cannot be distinguished one from the other, but also that the same syllables in /ˌi:kwiˈdistənt/ likewise appear to have similar articulatory force. Thus by removing pitch differences we have obscured, if not altogether destroyed, the basic distinction between Jones' principal stress and the secondary stress occurring before the principal stress. In cases when it is shown in EPD after the principal stress, the secondary stress most often indicates, in a compound word having the nuclear tone within its

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11) Hereinafter referred to by the initials EPD.

12) Thus for example leading H. E. Palmer (*Grammar of Spoken English*, Cambridge, 1939, p. 6) to regard word stress as referring to "a syllable, in a word of more than one syllable, which is susceptible of receiving one of the four nucleus tones".

13) *op. cit.*, p. 178.

first element, that syllable of its second element which, if the second element is said in isolation, bears the nuclear tone; thus *school-mistress* is given as /ˈskuːlˌmistris/, the secondary stress on the second syllable indicating the nuclear syllable of the isolate *mistress*. In simple words on the other hand, this post-nuclear secondary stress is not marked: *conversely* therefore appears as /ˈkɔnvəːsli/, although in our view the stress relationship between its second and third syllables is approximately the same as that between the second and third syllables of *school-mistress*; in both cases the second syllable is more strongly stressed than the third. It is significant that, when it is shown in EPD, this post-nuclear secondary stress, like that which precedes the nuclear tone, is always associated with a non-prominent pitch 14). Newman likewise, it seems to us, sometimes utilizes non-stress criteria to establish his stress phonemes. The phoneme of weak stress, it is true, is distinguished from the heavy and middle categories by its relatively weak articulatory force; but the differentiation between heavy and middle seems to depend predominantly upon the pitch associated with them, a prominent (nuclear or relatively high level) pitch with the former and a non-prominent (always non-nuclear and relatively low level) pitch with the latter. Indeed we are of the opinion that Newman's heavy and middle stress phonemes bear the same relation to each other and are distinguished on the same basis as Jones' principal and secondary stresses. Furthermore, the criterion used by Newman to separate the two sub-categories within each phoneme differs from phoneme to phoneme. Nuclear heavy contrasts with subordinate heavy, as we might expect from the terminology, in that the former coincides with the nuclear tone, the latter with a non-nuclear but prominent pitch — a pitch distinction therefore. The two varieties of middle stress, full and light, are apparently derived from a distinction of articulatory force, whilst the essential difference between the two types of weak stress, sonorous and pepet, is undoubtedly one of vowel quality.

7. We have gone into these matters in some detail to show how difficult it is firstly to obtain a widely acceptable hierarchy of more than two stress degrees in English and secondly to establish more than two stress categories without some reference, explicit or implicit,

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14) Assuming a falling nuclear tone, this is a low level pitch.

to non-stress criteria such as pitch and vowel quality. The fact is that variations of articulatory force are in themselves extremely difficult to seize and most times recognition of any stress type results, not from an accurate assessment of articulatory force alone, but from the interplay of this force and other, non-stress factors. Very often, in word or in utterance, the non-stress factor which gives, or is taken to give, the strongest indication of the various stress degrees is the pitch pattern accompanying the word or utterance. Now we have already referred to the prejudicial effect that pitch pattern can have on our recognition of stress and it seems to us to be imperative that in any study of stress we should try to discover and define our categories without any reference, explicit or implicit, to pitch phenomena. In this endeavour three procedures are open to us: firstly we can eliminate pitch phenomena altogether by testing all our material said on a monotone; secondly we can minimize their effects in a study of word stress by testing the word well within the body of an utterance where the word will not coincide with the nuclear tone; thirdly we can neutralize the effects of pitch phenomena by seeking to identify our stress degrees by, and to correlate them with, other speech phenomena that have as close a relation to stress and produce as strong a linguistic effect as does pitch. It is the last of these procedures that we have adopted though at the same time all the words considered in our analysis have also been subjected to the first procedure. The second procedure we have rejected completely since the stress pattern of the isolate word is often changed to a greater or less extent as soon as the word is placed in an utterance context.

8. We believe that the degree of stress placed upon any syllable in the word or utterance can be freely determined by reference to the rhythm pattern that accompanies the word or utterance. Classe in his book on rhythm says that "The phenomenon which, by recurring at more or less regular intervals, creates what may be called.... a feeling of rhythm in speech is generally admitted to be stress" 15). This statement clearly implies a very important point: in an utterance there are two degrees of stress, of which the stronger tends to recur at approximately equal time intervals, whilst the weaker is associated with all the syllables of the utterance which do not bear the stronger

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15) A. Classe, *The Rhythm of English Prose*, Oxford, 1939, p. 12.

stress thus defined. Hence the study of rhythm in any utterance not only indicates the placement of the so-called stress in that utterance but also effectively distinguishes between two categories of stress, STRONG corresponding to a strong rhythm beat and WEAK corresponding to a weak rhythm beat. In our experience consistently better results in the recognition of stress in utterances are achieved by students if they are taught to interpret stress by reference to rhythm rather than to articulatory force. Though our analysis is designed primarily for other purposes, it also seeks to show that this same technique of interpreting stress according to rhythm can be applied with equally good results to the isolate word.

9. The study of the rhythmic patterns in English words yields us the two same basic categories of stress which we have just noted in connection with the utterance, STRONG corresponding to the strong rhythm beat and WEAK corresponding to the weak rhythm beat; thus *compatibility*, for example, with rhythm pattern ⌣o⌣o⌣o 16)), has a strong stress on its second, fourth and sixth syllables and a weak stress on the remainder. We shall however find it useful to distinguish between the strong stress which in the word falls on the nuclear (that is, nuclear-tone-bearing) syllable and that which accompanies the non-nuclear syllable(s); these two types of strong stress will be referred to as TONIC STRONG and NON-TONIC STRONG. In making this distinction we are fully conscious that we are utilizing a criterion, namely pitch, which it is our expressed aim to eliminate from the study of stress; but we must emphasize that our reasons for doing so are purely practical, that at no time do the terms TONIC STRONG and NON-TONIC STRONG imply a difference in *degree* of stress and that they are always to be taken to indicate the same degree of stress associated with different pitch features. Our stress categories are then: TONIC STRONG, NON-TONIC STRONG and WEAK.

10. We must now give the reasons which prompted us to make the distinction between TONIC STRONG and NON-TONIC STRONG.

(a) Our analysis, as we have said, is designed in the first place to show the distributional relationships between the stress categories we have just established. Now if we consider the word as a whole, the

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16) Hereinafter o is used to indicate simultaneously a strong rhythm beat and a strong stress and ⌣ is to be understood as a weak rhythm beat and a weak stress.

statement of such relationships becomes extremely cumbersome since consideration of the word in its entirety yields very many differing rhythmic stress patterns. In order, therefore, to simplify our statement we have utilized the incidence of the TONIC STRONG stress to split the word into three constituent parts: the pre-tonic sequence, the tonic syllable bearing the TONIC STRONG stress and the post-tonic sequence. All words must have a tonic syllable; they may have one or other or both of the pre-tonic and post-tonic sequences. Nor is this procedure as arbitrary as it may first appear. Our investigations have shown that the rhythmic stress patterns in pre-tonic and post-tonic sequences present a quite remarkable symmetry and dividing the word into the above constituent parts allows us to simplify considerably our statement of the distributional relationships between our stress categories. Our analysis will then fall into two main sections: we shall consider first the stress possibilities in pre-tonic sequences and subsequently proceed to investigate post-tonic sequences. Though the TONIC STRONG stress is not specifically studied in either section, its occurrence either immediately following or preceding, is always implied in the analysis and the distribution of NON-TONIC STRONG stress and WEAK stress in either sequence is readily related to the TONIC STRONG stress.

(b) Our analysis is also designed to make clear the correlation between vowel quality and our stress categories, and our investigations have revealed that certain vowel qualities are usually associated with WEAK stress and others with STRONG stress, whether TONIC or NON-TONIC. A difficulty however arises with vowels /i/ and /u/ 17). Though they are most often weakly stressed in pre-tonic and post-tonic sequences they are also frequently associated with TONIC STRONG stress, as for example in *civilize* and *butcher*. Now it is a well-known fact that the TONIC STRONG stress is often carried over to related words and always carried over to compound 18) words as a NON-TONIC STRONG stress:

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17) All symbols used in this paper have EPD values.

18) Throughout the analysis of pre-tonic and post-tonic vowel sequences of two or more syllables we regard any word as COMPOUND if it can be split either into two or more complete words or into a separable prefix and a complete word, in both cases the tonic syllable occurring within the first element of the COMPOUND whether complete word or separable prefix. However, in the assessment of the stress values in monosyllabic pre-tonic sequences (para. 66a) it is necessary to extend the significance of the term COMPOUND word to include words of the type *arm-chair* in which the tonic syllable occurs within the second element.

thus *civilization* shows a NON-TONIC STRONG stress on /i/ in the initial syllable, the corresponding /i/ in the related word *civilize* having a TONIC STRONG stress; likewise we find a NON-TONIC STRONG stress on /u/ in the compound *pork-butcher*, corresponding to the TONIC STRONG stress on the same vowel in the simple word *butcher*. We have then to account for certain occurrences in pre-tonic and post-tonic sequences of /i/ and /u/ that are *not* weakly stressed. In cases typified by *civilization* the difficulty can be resolved by the PRINCIPLE OF RELATED WORDS:

> *When, in a pre-tonic sequence of three or more syllables* 19), *all vowels or all except the last* 20) *are of the type usually associated with* WEAK *stress, a* NON-TONIC STRONG *stress occurs on vowel /i/ of that syllable in the pre-tonic sequence which corresponds to the tonic syllable of* RELATED WORDS.

We must however here emphasize that this principle needs to be invoked comparatively rarely: its application is only necessary for, and has been limited to, tri-syllabic pre-tonic sequences in which the first two syllables both show /i/ and four-syllabled or longer pre-tonic sequences having /i/ in the first two or the first three syllables. In this way the contrasting stress values of pre-tonic sequence /i – i – i/ 21) in *civilization* o◡◡ and *delineation* ◡o◡ can be clearly differentiated. In cases of the type *pork-butcher* we shall have recourse to the PRINCIPLE OF COMPOUND WORDS:

> *In a* COMPOUND WORD, *having the* TONIC STRONG *stress within its first element and a post-tonic sequence of two or more syllables, a* NON-TONIC STRONG *stress occurs on that syllable of the second element which bears the* TONIC STRONG *stress if the second element is said as a* SIMPLE WORD.

This principle is most useful in dealing with COMPOUND words the post-tonic sequence of which contains only vowels usually weakly stressed: thus, for example, the differing stress values of /u/ in post-

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19) Pre-tonic sequences of one or two syllables create no difficulty in this respect; compare para. 20.

20) i.e., that of the syllable immediately preceding the tonic syllable. We shall see that this last syllable of polysyllabic pre-tonic sequences always has WEAK stress irrespective of vowel quality.

21) Hereinafter vowel symbols separated by hyphens and enclosed in diagonal brackets indicate vowel sequences with or without intervening consonants, and the words *vowel sequence* are omitted.

tonic /u – ə/ of *pork-butcher* (NON-TONIC STRONG) and *ambulance* (WEAK) call for no further explanation. Very occasionally this principle is also necessary for COMPOUND words having successively in their post-tonic sequence two vowels which are usually associated with NON-TONIC STRONG stress but one of which in fact appears to have WEAK stress (see para. 93 for example) 22). At this stage in our argument however the important point arising from both these principles is that their establishment depends entirely upon the differentiation between TONIC STRONG and NON-TONIC STRONG stress.

(c) The division of the word into its three constituent parts, pre-tonic sequence, tonic syllable and post-tonic sequence, which is made possible only by distinguishing between TONIC STRONG and NON-TONIC STRONG stress, is important in another direction. This division allows us to consider the pre-tonic sequence or the post-tonic sequence as a whole but at the same time divorced from the tonic syllable; in this way we are able to compare, rhythmically speaking, the component syllables of the pre-tonic or post-tonic sequence and thus ascertain their individual stresses, without having our judgment at all impaired by the effect of the nuclear tone associated with the tonic syllable. If, for example, we divide *conversely* into its constituent parts, tonic syllable /kɔn/, post-tonic sequence /vəːsli/ and compare the two syllables of the post-tonic sequence, it is evident that the first of these two syllables has a strong rhythm beat, and therefore a NON-TONIC STRONG stress, whilst the second bears a WEAK stress, corresponding to a weak rhythm beat. If however we consider the word *conversely* as a whole, the effect of the nuclear tone of the initial syllable is such that the two remaining syllables appear very weakly stressed in comparison and we may be tempted, on that basis, to ascribe to them both a WEAK stress, in spite of their differing rhythmic values within the post-tonic sequence. Of course this method of assessing the stress degrees in pre-tonic or post-tonic sequences by comparing their syllables each with the other but never with the tonic syllable leads

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22) At the outset we did seriously consider classifying SIMPLE and COMPOUND words separately but we found that no material advantage resulted from such a procedure. The vast majority of COMPOUND words behave rhythmically in much the same way as SIMPLE words in that they show a high degree of correlation between stress and vowel quality; and even if SIMPLE and COMPOUND words were treated separately something on the lines of the PRINCIPLE OF COMPOUND WORDS would still be essential.

to an obvious difficulty in the case of words with only one syllable preceding or following the tonic syllable. For such words the only possible comparison is that between the pre-tonic or post-tonic syllable and the tonic syllable, and such a comparison, owing to the association of the nuclear tone with the tonic syllable, leads to an assessment of relative stress values which at best is unreliable and at worst quite erroneous. By comparison, the second syllable (equals post-tonic sequence) of the noun *converse* is very much weaker than its initial, tonic, syllable, and for that reason, as well as by the argument that it is as weak as it can be, some may assert that this second syllable is indeed to be taken to have a WEAK stress. Yet the rhythmic treatment of the corresponding syllable in *conversely* strongly suggests that /vəːs/ in *converse* is not as weak as it could be and should therefore be accorded a NON-TONIC STRONG stress. In view of this difficulty, we have considered, in the initial stages of our investigation, only those words where effective comparison of non-tonic syllables is possible within any one given sequence, that is to say, words the pre-tonic or post-tonic sequence of which is at least dissyllabic. After our analysis of such words, however, we shall be able, from the general rhythmic stress behaviour of their immediate pre-tonic and post-tonic syllables and from any correlation(s) that can be made between stress and vowel quality in such syllables, to infer the rhythmic stress values that are probable in monosyllabic pre-tonic and post-tonic sequences.

(d) English is often referred to as a language in which the stress (that is, strong stress) in words is free; unlike some languages, such as French and Polish, the stress is not tied to any given position, initial syllable, penultimate syllable and the like. This we believe to be only a partial truth. The TONIC STRONG stress is unquestionably free but we believe that our analysis will show that the NON-TONIC STRONG stress is anything but free. The patterning of NON-TONIC STRONG stress and WEAK stress in pre-tonic and post-tonic sequences, viewed in conjunction with the correlations we shall make between those two stress types and vowel quality, shows quite clearly that the incidence of NON-TONIC STRONG stress is very much tied to the incidence of TONIC STRONG stress in the word. This fundamental difference in their nature, free on the one hand and bound on the other, more than justifies, it seems to us, the distinction between TONIC STRONG and NON-TONIC STRONG stress by pitch criteria.

III. Stress and vowel quality

11. The basis of our investigations into stress is the WORD which we make no attempt to define; along with Jones, Newman, Trager and Bloch, and many others we assume without discussion the existence of such a linguistic entity. At no time in classifying our material do we take into consideration the simple or compound nature of any given word; but as the above discussion of the PRINCIPLE OF COMPOUND WORDS indicates, in the case of a very small minority of words, we are obliged, when interpreting our classified material, to draw attention to the compound structure of these words in order to account for some apparent exceptions to the correlation between stress and vowel quality.

12. Though we leave the word undefined we must at the same time make clear the type of pronunciation on which we base our analysis. The type of pronunciation with which we are here concerned is the *Received Pronunciation of Southern British English.* Our reasons for this choice are twofold: firstly RP is that type of British English pronunciation which has been most systematically analysed and described; secondly, and perhaps more important from our point of view, it is the only pronunciation of British English which offers a fairly comprehensive word list with a consistently transcribed pronunciation: we refer of course to Jones' *English Pronouncing Dictionary* and it is this corpus of words that we have investigated 23). We are aware that EPD provides but a sample of English words and we are aware also of the dangers attendant upon sampling. But we are convinced that the EPD word-list is a very representative one, and that it throws up all the rhythmic stress patterns to be found in English words, together with most, if not all, of the difficulties that arise in any attempt to correlate stress with vowel quality in English words.

13. We must now say something about the way in which we have handled the entries in EPD. Where EPD offers less common pronunciations 24) in addition to the main one, we have usually considered the latter only, though the former would in the vast majority of cases have yielded equally good results; and where words are shown with two or

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23) Fourth edition, 1937.

24) Enclosed in square brackets.

more equally common pronunciations, we have most often included them all in our classification. Occasionally however we have used the less common pronunciation instead of the main one and have also on occasions disregarded one of two equally frequent pronuncations. The reason for this lack of uniformity of treatment lies in the modifications we have made to the vowel list given in the introduction to EPD (p. XXV). Though they are designed to simplify our initial classification, these modifications, which we now give, are entirely in conformity with indications given in EPD and in a more recent publication by Jones [25]. The following diphthongs have been completely omitted for the reasons stated:

/ɔə/ occurs only as a variant of /ɔː/ or /uə/.
/eə/ likewise is found only as a variant of the dissyllable /eiə/.
/ui/ can always be and has been taken as a dissyllable.
/oi/ and /oə/ also allow the interpretation that they are dissyllabic sequences, and this interpretation we have adopted. When /o/ in such sequences is rhythmically strong, as for example

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[25] D. Jones, *Falling and Rising Diphthongs in Southern English*, Miscellanea Phonetica II, 1954, published by the International Phonetic Association. Note in connection with our argument in para. 15 that since our researches were completed there has appeared a new edition of EPD (Dent, London, 1956) in which entries involving /iə/ and /uə/ are made in accordance with the views expressed by Jones in his *Falling and Rising Diphthongs in Southern English*. Time has not permitted a complete reappraisal of all our material in the light of the transcriptional distinction now shown in EPD between /iə/ and /ĭə/ and between /uə/ and /ŭə/, but it can be stated that our general thesis concerning FORTIS and LENIS vowels (para. 14) is unaffected. Preliminary investigations show (a) that /iə/ and /uə/, monosyllabic and falling diphthongs, are still to be classed as FORTIS vowels, being normally rhythmically strong and associated with NON-TONIC STRONG stress in pre-tonic and post-tonic sequences; and (b) that /ĭə/ and /ŭə/ fall within our category of LENIS vowels, being normally rhythmically weak and associated with WEAK stress. It is to be emphasised however that, within the limits set in para. 15, our treatment of rhythmically weak /iə/ and /uə/, that is Jones' rising diphthongs, as dissyllables remains in accord with other views expressed by Jones in the paper we have referred to above. It seems probable that the only important effect that the inclusion of /ĭə/ and /ŭə/ as LENIS vowels would have on our findings would be the need to reclassify all words in which /ĭə/ and /ŭə/ have been taken by us as dissyllabic: thus, for example, *arianize* and *valuable* which we have assigned to post r.s.p. ◡◡o would then belong to post r.s.p. ◡o.

in *veto-ing* and *lawn-mower*, we have classified it as /ou/; when rhythmically weak, as in *shadowy* and *borrower*, /o/ has been retained.

In addition to these modifications we have, in conformity with EPD, regarded /aiə/ and /auə/, like /eiə/, as dissyllables and syllabic consonants, /l/, /m/, /n/ and /ŋ/ have been interpreted as /ə/ plus consonant and classified as such.

14. The basic list of vowels with which we have worked is therefore:
/iː i e æ ɑː ɔ ɔː o u uː ʌ əː ə
ei ou ai au ɔi iə ɛə uə/.

Our analysis of the pre-tonic and post-tonic rhythmic stress patterns found by studying all the entries in EPD shows that these vowels, with two exceptions, /iə/ and /uə/, can be allotted to two broad groups:

(a) Vowels which are *normally* rhythmically weak, and so have WEAK stress: /i/ [26], /ə/, /u/ [27], /o/;

(b) Vowels which are *normally* rhythmically strong and thus have NON-TONIC STRONG stress:
/iː, e, æ, ɑː, ɔ, ɔː, uː, ʌ, əː,
ei, ou, ai, au, ɔi, ɛə/.

The word *normally*, used in the above categorizations, is a necessary restriction, since we find several general cases where clearly defined distributional factors cause vowels in group (a) to be rhythmically strong and take NON-TONIC STRONG stress and likewise vowels in group (b) to be rhythmically weak and have WEAK stress; thus, for example, the final /ə/ bears a NON-TONIC STRONG stress in *compositor* [28] whilst /ai/ in *equalization* [29] takes a WEAK stress. The distributional factors which govern these and other divergences from the above groupings are dealt with as our analysis proceeds. A further result of these divergences is that the terms *weak vowels* and *strong vowels* are not adequate labels for our two vowel categories. Vowels belonging to group (a) therefore we propose to call LENIS and those in group (b)

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[26] Subject always to the application, in pre-tonic sequences, of the PRINCIPLE OF RELATED WORDS and, in post-tonic sequences, of the PRINCIPLE OF COMPOUND WORDS; see para. 10(b).

[27] Subject to the application in post-tonic sequences of the PRINCIPLE OF COMPOUND WORDS.

[28] Compare para. 71(i).

[29] Compare paras. 19, 20 and 45.

FORTIS. In this way we shall, when necessary, be able to refer to strong (i.e. having NON-TONIC STRONG stress) LENIS vowels and weak (i.e. taking WEAK stress) FORTIS vowels.

15. We have now to examine the cases of /iə/ and /uə/ which are difficult in that they appear sometimes to be FORTIS vowels, as in *Bedfordshire* and *manicure*, and sometimes LENIS vowels, as in *variable* and *valuable*. Analysis of all entries in EPD in which /iə/ forms part of a pre-tonic or post-tonic sequence that is at least dissyllabic, confirms that all occurrences of rhythmically strong /iə/, unlike those that are weak, are never given with a variant pronunciation. In all such cases /iə/ appears to be a bi-vocalic sequence in which the first element, to use Jones' terminology, is more prominent than the second and which conforms in all respects to Jones' definition of a falling diphthong. When however /iə/ is rhythmically weak, EPD most often gives /jə/ as a variant. The only situation in which /jə/ is not so given is when /r/ immediately precedes; in words of this type mostly no variant is found, though /io/ sometimes occurs. The contrast in treatment between rhythmically strong and weak /iə/, in so far as variant pronunciations are concerned, immediately suggests that the symbol /iə/ in EPD represents more than one phonetic value. Furthermore the symbolisation of the variant /jə/ indicates that the first element in rhythmically weak /iə/, unlike that of its strong counterpart, is never more prominent than the second element and may in fact be less so. A further interpretation of rhythmically weak /iə/ is possible, an interpretation not shown by the transcriptional use in EPD but attested by Jones more recently [25]), and certainly more in line with our own general feeling on the matter: rhythmically weak /iə/ can be regarded as a dissyllabic sequence. If so regarded, the /i/ element is *always* rhythmically weak irrespective of the rhythmic value of the following /ə/, which may be strong as in *colonial* or weak as in *arianize*. In view of these remarks and in order to remain consistent as far as we can with EPD, we have in our investigations considered rhythmically strong /iə/, as for example in *Bedfordshire*, to be a falling diphthong and monosyllabic; it belongs to our group of FORTIS vowels and as such is normally associated with NON-TONIC STRONG stress in pre-tonic or post-tonic sequences. Rhythmically weak /iə/ we have treated in two ways. When EPD gives /jə/ as a variant, in *conciliatory* for example, we have adopted that pronunciation, regarding /jə/ as monosyllabic

and classifying it as LENIS /ə/, normally associated with WEAK stress. When however EPD shows no variant, as in *variable*, rhythmically weak /iə/ is for us a dissyllable composed of LENIS /i/ and LENIS /ə/; the former always has WEAK stress, the latter takes either WEAK stress or NON-TONIC STRONG stress depending on distributional factors. /uə/ is treated on similar lines, though there is a difference resulting from the fact that EPD does not recognize variant /wə/ parallel with /jə/ in the case of /iə/ 30). When it is rhythmically strong, as in *manicure*, we have looked upon /uə/ as a falling diphthong and monosyllabic, and it is placed in our category of FORTIS vowels. Rhythmically weak /uə/ we have always taken to be a dissyllabic sequence made up of LENIS /u/ and LENIS /ə/; /u/ is always said with a WEAK stress, /ə/ may have either a NON-TONIC STRONG stress as in *valuer* or a WEAK stress as in *valuable*. /iə/ and /uə/ should then be added to the FORTIS group of vowels given in para. 14 (group (b)).

16. We are now in a position to give our analysis of English words in respect of their pre-tonic and post-tonic rhythmic stress patterns; we shall set forward these patterns in such a way that the correlation between FORTIS vowel and NON-TONIC STRONG stress on the one hand and between LENIS vowel and WEAK stress on the other hand is made abundantly clear. To facilitate reference from stress type to vowel quality and vice-versa, and to facilitate comparison of words in which the pre-tonic and/or post-tonic sequences are of different length, we have employed the system of numbering the syllables of pre-tonic and post-tonic sequences from the tonic syllable; thus

	Pre-tonic Sequence	*Tonic Syllable*	*Post-tonic Sequence*
educational	2 1 edju	kei	1 2 ʃənəl
internationalization	5 4 3 2 1 intənæʃnəlai	zei	1 ʃən
purify		pjuə	1 2 rifai
purificatory		pjuə	1 2 3 4 5 rifikeitəri

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30) Jones now considers /wə/ to be a possible variant of /uə/; compare his *Falling and Rising Diphthongs in Southern English.*

Such a system has also the great merit of indicating at a glance the distributional relationship between on the one hand any NON-TONIC STRONG OR WEAK stress, whether pre-tonic or post-tonic, and on the other the TONIC STRONG stress coinciding with the tonic syllable. The lay-out will be the same for all rhythmic stress patterns, namely

(a) Examples of the pattern.
(b) List of vowels occurring in each position of the pattern, and the vowel sequence types that arise from the given vowel distribution.
(c) Discussion of examples in which the correlation between stress type and vowel type appears to break down and elucidation, where possible, of distributional factors occasioning such divergences. Though much of our time in the following analysis is taken up in these matters, we must again emphasise that our discussion concerns relatively few words, the vast majority conforming quite regularly to our general thesis and calling for no comment.

Finally we must make it clear that the rhythmic stress patterns which we give have in the first place been derived from our own realization of the pronunciations shown in EPD. These patterns have however been checked and cross-checked in the speech of other people and our thanks are due and gratefully given to many of our colleagues who have afforded us much valuable assistance in this connection.

IV. PRE-TONIC RHYTHMIC STRESS PATTERNS [31]

Pattern $\overset{2}{\circ}\ \overset{1}{\smile}$

17. Examples: *decantation, acclimation, compurgation, aldermanic, fluctuation, circulation, bifurcation, realization, curability.*

18. Vowel distribution: [32]:

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[31] Abbreviated hereinafter to p.r.s.p.

[32] It should be noted (a) that all possible combinations of the vowels listed in this and all subsequent r.s.p. have not necessarily been found and (b) that, as our work has been based almost exclusively on EPD, certain words not appearing therein might yield further vowels for any specific position in any given r.s.p. For our part the essential feature of this and subsequent vowels lists is not so much which vowels occur, though this in a few cases may be important, but rather the division of the vowels listed into FORTIS and LENIS and the association of one or other or both of these categories with the various

Position 2.	FORTIS	All
	LENIS	i (u) 33)
Position 1.	FORTIS	All pure vowels and (ei) ai (ɔi) (ɛə)
	LENIS	i ə u o

All the vowel sequence types which can arise from this distribution have been found:

(a) FORTIS plus LENIS e.g. *audibility*
(b) FORTIS plus FORTIS e.g. *elongation*
(c) LENIS plus FORTIS e.g. *immortality*
(d) LENIS plus LENIS e.g. *incubation.*

19. In Position 1 all the FORTIS pure vowels are frequently found but, except for /ai/, diphthongs are rare: /ei/ occurs in *distrainee, distrainor, dilatation* and *Esdraelon,* the last two of which have a variant pronunciation in /ə/; /ɔi/ appears only in *employee,* but this word can also be said with the TONIC STRONG stress on /ɔi/ rather than on the final /i:/; the only example of /ɛə/ listed is *Llanfairfechan* which is commonly heard now-a-days with a pronunciation (not given in EPD) in /ə/ rather than /ɛə/. Thus for all practical purposes the FORTIS vowels in Position 1 are limited to the pure vowels and the diphthong /ai/; a summary of the peculiarities in distribution exhibited by /ai/ will be given later (see para. 45). In Position 2 we have found /u/ only in *ruination,* which has a variant pronunciation in /u:/, and *Uruguayan* in which the initial /u/ is often replaced by the sequence /jɔ:/ or /juə/; this leaves /i/ as the only LENIS vowel regularly occurring in Position 2. We must now try to account for the appearance of FORTIS vowels in Position 1 with WEAK stress and for the occurrence of LENIS /i/ in Position 2 which carries a NON-TONIC STRONG stress.

20. Reference to all p.r.s.p. thrown up by the EPD word-list shows quite conclusively that one but not both of the two syllables which in any pre-tonic sequence are the most remote from the tonic syllable

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positions (i.e. stress types) in all r.s.p.; we believe that words not given in EPD would tend merely to add any absent FORTIS or LENIS vowels to the positions for which they are appropriate, FORTIS to strong positions, LENIS to weak.

33) Round brackets enclosing any symbol indicate the vowel to be of infrequent occurrence in the relevant position, at least so far as EPD is concerned.

of the word can be rhythmically weak, and thus have WEAK stress [34]. Furthermore in the course of our researches we have discovered in the whole range of polysyllabic p.r.s.p. only three words, *electricity*, *idealistic* and *appointee* (not in EPD), the most common pronunciation of which indicates pre-tonic Position 1 to be rhythmically strong and to have NON-TONIC STRONG stress. At the same time it should be noted that for the first two of these words EPD gives variant pronunciations, /ˌelekˈtrisiti/ and /ˌaidiəˈlistik/, obviously denoting p.r.s.p. o⌣; likewise we have heard *appointee* pronounced /ˌæpɔinˈtiː/. Thus we can say that to all intents and purposes Position 1 in dissyllabic or longer pre-tonic sequences is always weak [35], and this together with the fact that the syllables of a dissyllabic pre-tonic sequence cannot both be weak, allows us to make the generalization that dissyllabic pre-tonic sequences always have p.r.s.p. o⌣ irrespective of the vowel qualities occurring in either position [36]. Undoubtedly the oscillation in the case of *electricity*, *idealistic* and *appointee* is the result of the pressure exerted by this extremely common p.r.s.p.

21. Mention is necessary here of words such as *co-efficient* /ˌkouiˈfiʃənt/ and *co-optation* /ˌkouɔpˈteiʃən/ in which the second element of the diphthong /ou/ is elidible before the following vowel. We have

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[34] Of course in utterance contexts words with dissyllabic or longer pre-tonic sequences often have both such syllables rhythmically weak. We are of the opinion however that such occurrences should be regarded as rhythmic variants that are appropriate sometimes in context but never in the isolate word, a phenomenon rather like the tonal assimilation common in many tone languages. It was considerations such as these that lead us to disregard Newman's technique of testing words for stress well within the body of an utterance; see para. 7.

[35] Thus we do not set up a pre-tonic r.s.p. ⌣o for the three words we have quoted.

[36] Note that in the whole range of p.r.s.p. all the FORTIS vowels occur or can be considered to occur in Position 1: pure vowels are much more common than diphthongs of which /ai/ alone is consistently found; /au/, /ɔi/ and /ɛə/ are very rare. Note also that with Position 1 in polysyllabic pre-tonic sequences invariably weak irrespective of vowel quality it is possible for FORTIS /iə/ and /uə/ to appear in that position even though rhythmically weak. Thus /iə/ and /uə/ which, in accordance with our statement in para. 15, we have taken to be dissyllabic in such words as *variability*, *ritualistic*, both p.r.s.p. o⌣⌣, *materialistic* p.r.s.p. ⌣o⌣⌣ and *spiritualistic* p.r.s.p. o⌣⌣⌣ might equally well have been treated as monosyllabic (i.e. FORTIS) with the consequent elimination of the immediate pre-tonic WEAK stress in the p.r.s.p. quoted.

already stated (para. 13) our intention of treating /oi/ and /oə/ as dissyllabic /oui/ and /ouə/ when their first element /o/ is rhythmically strong, in order to simplify the classification of our material; the same reason also prompts us to disregard the equally common pronunciation of *co-optation* as /ˌkoɔp-/ and of similar words where the vowel following this /o/ is neither /i/ nor /ə/. We can at this point however adduce further reasons for our decision. Firstly, Position 2 of p.r.s.p. o⌣ is the only position in *all* p.r.s.p. where it is possible for /o/ to occur rhythmically strong and bear a NON-TONIC STRONG stress; thus by taking all such occurrences of /o/ as /ou/ we are able to make the generalization that pre-tonic LENIS /o/ always has WEAK stress. Secondly consideration of all p.r.s.p. reveals that of the four LENIS vowels only /i/ *must* be deemed susceptible of taking a NON-TONIC STRONG stress, that is, of being rhythmically strong; pre-tonic /ə/ is never rhythmically strong and pre-tonic /u/ is rarely, and then only optionally, so (see para. 19). Thus by treating *co-efficient* and the like as /ˌkoui-/ rather than /ˌkoi-/, we leave pre-tonic /i/ sharply differentiated from the other pre-tonic LENIS vowels, a feature implicit in our discussion of the PRINCIPLE OF RELATED WORDS (para. 10(b)) and to which we shall refer again when dealing with p.r.s.p. ⌣o⌣ (para. 31).

3 2 1
Pattern oo⌣

22. Examples: *redistribution*, *predestination*, *decomposition*, *disembarkation*, *misrepresent*, *incurability*, *exterritorial*, *transcontinental*, *unsatisfactory*.

23. Vowel distribution:

Position 3.	FORTIS	iː e æ ʌ ei ou ai
	LENIS	i
Position 2.	FORTIS	All except/ɔː ɔi iə ɛə/
	LENIS	i
Position 1.	FORTIS	(e) (ɑː) (ɔː)
	LENIS	i ə u o

Of the eight vowel sequence types which can result from this distribution, only one, LENIS plus LENIS plus FORTIS, has not been found. The remaining sequences are:–

(a) LENIS plus FORTIS plus LENIS e.g. *indecomposable*

(b) LENIS plus FORTIS plus FORTIS e.g. *disadvantageous*
(c) LENIS plus LENIS plus LENIS e.g. *dissimulation*
(d) FORTIS plus FORTIS plus FORTIS e.g. *re-exportation*
(e) FORTIS plus FORTIS plus LENIS e.g. *unascertainable*
(f) FORTIS plus LENIS plus LENIS e.g. *undiplomatic*
(g) FORTIS plus LENIS plus FORTIS e.g. *re-incarnation.*

24. In all cases the NON-TONIC STRONG stress in Position 3 coincides with a separable monosyllabic prefix [37]. This fact immediately suggests that we are here dealing, not with what we may term a basic r.s.p., but with a composite pattern consisting of a p.r.s.p. o and the p.r.s.p. o⌣ which we have already discussed. This interpretation we believe to be correct, not only because of the obviously composed nature of all the words illustrating p.r.s.p. oo⌣, but also for three other weighty reasons. Firstly, a common rhythm of the first two syllables of words the pre-tonic sequence of which is constituted solely by a separable monosyllabic prefix, such as *re-marry*, *inglorious*, *transalpine* and *unlatch*, demands that irrespective of the vowel quality in the syllable on which it occurs the p.r.s.p. o be set up in its own right and not simply as a p.r.s.p. that can be prefixed to p.r.s.p. o⌣. Secondly, by the establishment of p.r.s.p. o our general statement of all p.r.s.p. is considerably simplified; as we shall show, p.r.s.p. oo⌣⌣ and oo⌣o⌣ can be analysed as o plus o⌣⌣ and o⌣o⌣ respectively, both of which latter patterns are set up independently of words beginning with a separable monosyllabic prefix. Thirdly if we analyse the structure of all r.s.p., whether pre-tonic or post-tonic, we find in English words a marked aversion to a sequence of two successive NON-TONIC STRONG stresses; in fact it is only initially in p.r.s.p. involving separable monosyllabic prefixes that such a sequence is possible.

25. Certain consequences follow from this resolving of p.r.s.p. oo⌣ into o plus o⌣. Firstly, as in p.r.s.p. o⌣, Position 2 has a NON-TONIC STRONG stress even when occupied by LENIS /i/ and when the sequence FORTIS plus LENIS plus vowel might suggest p.r.s.p. o⌣⌣: thus *re-*

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[37] We use the term *separable prefix* in the sense ascribed to it by Jones: it is a prefix with a distinct meaning of its own; see *Outline of English Phonetics*, para. 922 and footnote. The prefixes we have noted in this connection are:- *de-*, *pre-*, *re-*, *dis-*, *in(im)-*, *mis-*, *ex-*, *self-*, *trans-*, *un-*, *sub-*, *a-*, *co-*, *di-*, *tri-*.

distribution /iː – i – i/, *re-introduction* /iː – i – ə/, *co-incidental* /ou – – i – i/. Secondly the presence of a FORTIS vowel in weakly stressed Position 1 is in no way an anomaly, since p.r.s.p. o⌣ admits the same possibility (paras. 18 and 20): thus /e/ in *unostentatious*, /ɑː/ in *re-incarnation*, /ɔː/ in *re-exportation*. Nonetheless it should be noted that in this position LENIS vowels predominate: of the 77 different pre-tonic vowel sequences which EPD offers for words said with oo⌣ all but 10 show a LENIS vowel in Position 1. Furthermore some of the words given in EPD with a FORTIS vowel in Position 1 are now-a-days frequently pronounced with a LENIS vowel: compare for example *unostentatious* with /ə/ replacing EPD /e/ and *disadvantageous* with /ə/ instead of EPD /ɑː/. Thirdly, since p.r.s.p. o is appropriate for all separable monosyllabic prefixes irrespective of their vowel quality, Position 3 has a NON-TONIC STRONG stress even when occupied by LENIS /i/ and when the sequence LENIS plus FORTIS plus vowel might otherwise suggest p.r.s.p. ⌣o⌣: examples are *indecomposable* /i – iː – ə/, *dissatisfaction* /i – æ – i/, *inoccupation* /i – ɔ – u/.

26. We have already referred to the fact that a succession of two NON-TONIC STRONG stresses is unique to words with polysyllabic pre-tonic sequences and showing a separable monosyllabic prefix (para. 24). It is not surprising therefore that some attempt should be made to eliminate this one exception to the general pattern of NON-TONIC STRONG stress distribution by replacing the NON-TONIC STRONG stress in either Position 3 or Position 2 with a WEAK stress and thus, as it were, assimilating oo⌣ respectively to ⌣o⌣ or o⌣⌣; and no doubt the relative rarity of oo⌣ as compared with ⌣o⌣ and o⌣⌣ hastens this process. When the assimilation is made it is most often to o⌣⌣ even though in many instances the anomaly of FORTIS vowel with WEAK stress is created in Position 2, as for example /æ/ in *unascertainable* and /ɔ/ in *decomposition*. This tendency to assimilate to o⌣⌣ becomes all the stronger when Position 3 shows a FORTIS vowel and Position 2 LENIS /i/, as in *undiplomatic* and *pre-disposition*, thereby producing o⌣⌣ which is quite regular for the sequence FORTIS plus LENIS plus LENIS. On the other hand words beginning with a separable monosyllabic prefix in LENIS /i/ are sometimes pronounced with p.r.s.p. ⌣o⌣, especially if Position 2 has a FORTIS vowel: examples of this are *dissatisfaction*, *inoccupation*, *miscalculation* in all of which ⌣o⌣ is consistent with the sequence LENIS plus FORTIS plus LENIS. However

this is not always the case and in many words presenting this vowel sequence, such as *disapprobation, disadvantageous* and *misunderstand*, the preference is for o⌣⌣ rather than ⌣o⌣. Very occasionally EPD transcribes words like *pre-destination* and *preoccupation* with LENIS /i/ replacing FORTIS /iː/ in Position 3, thereby suggesting for such words a p.r.s.p. ⌣o⌣ which is usual for the resulting sequence LENIS plus FORTIS plus LENIS. From this discussion one point is abundantly clear: this oscillation between o⌣⌣ and ⌣o⌣ by words of the same structure and all the inconsistencies 38) which arise if these words are classified as o⌣⌣ or ⌣o⌣ or even both can only be avoided if such words are deemed to have p.r.s.p. oo⌣ or rather a sequence of the basic p.r.s.p. o and o⌣. When therefore oo⌣ is assimilated to o⌣⌣, the latter is to be regarded as o plus ⌣⌣, ⌣⌣ being a contextual variant of the basic p.r.s.p. o⌣ which is only appropriate when a separable monosyllabic or dissyllabic (see para. 51) prefix precedes it. Likewise when oo⌣ is assimilated to ⌣o⌣, the latter must be thought of as ⌣ plus o⌣ with ⌣ as a contextual variant of the basic p.r.s.p. o 39). In any case ⌣o⌣ could never be taken as basic to the words we are considering, since a NON-TONIC STRONG stress is compulsory for the separable prefix (Position 3) if the meaning of the prefix is to be made prominent.

3 2 1
Pattern ⌣o⌣

27. Examples: *depreciation, ejaculation, excitability, acceptability, convertability, accountability, humiliation, obliteration, domestication.*

28. Vowel distribution:

Position 3.	FORTIS	e æ (ɑː) (ɔ) (ɔː) ai
	LENIS	i ə (u) o
Position 2.	FORTIS	All except /ɔi ɛə uə/
	LENIS	i
Position 1.	LENIS	i ə u o

The four vowel sequence types which can arise from this distribution have all been noted: –

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38) FORTIS vowels with WEAK stress and LENIS vowels with NON-TONIC STRONG stress in ill-defined circumstances.

39) ⌣ as a variant of o is quite common for words of the type *re-marry, inglorious* and so on mentioned in para. 24.

(a) LENIS plus FORTIS plus LENIS: very common, e.g. *demonstrability*; vowel quality/stress correlation normal in all positions.
(b) FORTIS plus FORTIS plus LENIS: quite rare, e.g. *antagonistic*; for weak FORTIS vowel in Position 3 see para. 29(a), (b), (c) and (d).
(c) FORTIS plus LENIS plus LENIS: very rare, e.g. *gesticulation*: for weak FORTIS vowel in Position 3 and strong LENIS vowel in Position 2 see para. 29(e) and (f), and para. 31.
(d) LENIS plus LENIS plus LENIS: common, e.g. *debilitation*: for strong LENIS vowel in Position 2 see para. 31.

29. In Position 3 EPD has FORTIS /e/ and /ai/ with a variant LENIS /i/ as in *encyclopedia* and *divarication* and FORTIS /æ/ and /ɔ/ with a variant LENIS /ə/ for example in *accentuation* and *conglomeration*. In all such cases we have adopted the variant pronunciation and the vowel sequences then call for no comment. There remains however a residue of 24 words which in Position 3 have for EPD an obligatory FORTIS vowel and which in Position 2 mostly present a FORTIS vowel but very occasionally have LENIS /i/. Of this residue of 24 words those which have the sequence FORTIS plus FORTIS plus LENIS and are therefore exceptional only in that they offer a FORTIS vowel in Position 3, are:

(a) *epexegesis* /e – e – i/, *epexegetic* /e – e – i/,
extemporaneous /e – e – ə/, *exacerbation* /e – æ – ə/,
expurgatorial /e – əː – ə/, *exfoliation* /e – ou – i/,
expropriation /e – ou – i/, *exteriority* /e – iə – i/.

In all these words FORTIS /e/ in Position 3 is nowadays readily replaced by LENIS /i/ and the resulting sequence LENIS plus FORTIS plus LENIS correlates normally with p.r.s.p. ◡o◡.

(b) *antagonistic* /æ – æ – ə/, *ambassadorial* /æ – æ – ə/,
bacteriologist /æ – iə – i/, *ostensibility* /ɔ – e – i/,
posteriority /ɔ – iə – i/.

These words are now sometimes heard with LENIS /ə/ in Position 3, thus giving vowel sequences that are quite regular for this p.r.s.p.

(c) *Pythagorean* /ai – æ – ə), *hypothecation* /ai – ɔ – i/,
iconoclastic /ai – ɔ – o/, *idealization* /ai – iə – ai/.

See para. 45 for a summary of the distributional peculiarities of FORTIS /ai/, and a statement of the principle governing the occurrence of this vowel with a WEAK stress in Position 3. It should also be noted that *idealization* is now often said with p.r.s.p. o◡◡ which correlates regularly with the vowel sequence in /aidjəlai-/; compare a similar shift of the NON-TONIC STRONG stress in *idealistic* (para. 20). Furthermore, *idealization* is the only example, in EPD, of p.r.s.p. ◡o◡ to show a FORTIS vowel in Position 1; but FORTIS vowels are quite common in that position of p.r.s.p. o◡◡. We have therefore adopted the pronunciation /aidjəlai-/ correlating with p.r.s.p. o◡◡, and omitted FORTIS /ai/ from Position 1 in para. 28.

(d) *authentication* /ɔː – e – i/.

The remaining six words, given in EPD with the sequence FORTIS plus LENIS plus LENIS, have a FORTIS vowel with WEAK stress in Position 3 and LENIS /i/ with NON-TONIC STRONG stress in Position 2. They are:-

(e) *gesticulation* /e – i – u/, *participation* /ɑː – i – i/, *articulation* /ɑː – i – u/. The first two words now allow LENIS /ə/ for the FORTIS vowel in Position 3, giving rise to exclusively LENIS pre-tonic vowel sequences. These are dealt with in para. 31. The replacement of /ɑː/ by /ə/ is possible but not very common in *articulation*.

(f) *anticipation* /æ – i – i/, *antipathetic* /æ – i – ə/, *antipodean* /æ – i – ə/. P.r.s.p. o◡◡, as is shown by EPD, is also used for these words, thus providing a regular correlation between stress and vowel quality. Note also that when said with p.r.s.p. ◡o◡, FORTIS /æ/ can be replaced by LENIS /ə/ in *anticipation* and *antipathetic*, both words then having exclusively LENIS pre-tonic vowel sequences (see para. 31).

From our comments, it will be seen that of these 24 words only *authentication* must be considered really anomalous. Hence the extension of our PRINCIPLE OF RELATED WORDS to pre-tonic sequences containing FORTIS vowels in Position 3 or 2 or both is unnecessary, even though Position 2 in most, if not all, of the above words corresponds to the tonic syllable in other words related to them: compare for example *Pythagorean* with *Pythagoras*, *participation* with *participate*.

30. In Position 3 LENIS /u/ is rare and when followed in Position 2 by LENIS /i/ readily makes way for FORTIS /uː/ with a change of p.r.s.p. to o◡◡, as for example in *humiliation* and *municipality*, in spite of the fact that exclusively LENIS pre-tonic /u – i – i/ correlates quite normally with p.r.s.p. ◡o◡ (see para. 31). This same change of p.r.s.p. is also possible for *tuberculosis* attendant upon the change of /u – əː – u/ to /uː – ə – u/.

31. Except for the six words quoted in para. 29 (groups (e) and (f)) LENIS /i/ occurs in Position 2, only when preceded in Position 3 by a further LENIS vowel; and since Position 1 in this p.r.s.p. is always occupied by a LENIS vowel, we have now to tackle the problem of the exclusively LENIS pre-tonic vowel sequence to which reference has already been made several times (para. 29). Basically, so far as trisyllabic pre-tonic sequences are concerned, we need only consider Positions 3 and 2, because Position 1 in polysyllabic pre-tonic sequences always has a WEAK stress irrespective of vowel quality [40]. Of these two Positions 3 and 2, one must have a NON-TONIC STRONG stress since English words never show a sequence of two WEAK stresses initially (para. 20) but both cannot have a NON-TONIC STRONG stress, since Position 3 does not coincide with a separable monosyllabic prefix (para. 24). The problem is which of Positions 3 and 2, when both are LENIS, is to take the NON-TONIC STRONG stress: some words with a LENIS vowel in both positions are said with p.r.s.p. ⌣o⌣, *invigilation*, *administration*, *humiliation* and *obliteration* for example, others such as *imitability* and *intercollegiate* with p.r.s.p. o⌣⌣. Now a study of all the relevant words reveals that LENIS /i/ always occurs either in Position 3 or in Position 2 or in both and that a sequence of two of LENIS /ə/, /u/, and /o/ is an impossibility. It is therefore convenient to deal with our general problem in two parts:-

(a) *Words which have* LENIS /i/ *in Position 3 or Position 2 but not both.*

We have already stated (para. 21) that in pre-tonic sequences the stress behaviour of /i/ is sharply differentiated from that of the other LENIS vowels: /ə/ and /o/ never take a NON-TONIC STRONG stress and /u/ can be stressed in this way only in the case of the two words *ruination* and *Uruguayan* (para. 19). We can thus establish the following principle:

In all exclusively LENIS *pre-tonic sequences* /i/ *ranks higher than the other* LENIS *vowels, in that unlike the latter it may bear a* NON-TONIC STRONG *stress.*

Thus with Position 1 weak *administration* /ə – i – i/, *humiliation* /u – i – i/ and *obliteration* /o – i – ə/, for example, are marked as having p.r.s.p. ◡o◡, whilst *higgledy-piggledy* /i – ə – i/ and *intercollegiate* /i – ə – ə/ must have p.r.s.p. o◡◡. See however para. 66 (b) for the interpretation of p.r.s.p. o◡◡ in a word such as *intercollegiate*.

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[40] See para. 20. There are two exceptions to this general weakness of Position 1 but both involve *monosyllabic* pre-tonic sequences: words with such sequences equal to separable prefixes (para. 24) and compound words of the type *armchair* (para. 66a) have a NON-TONIC STRONG stress in Position 1.

(b) *Words which have* LENIS /i/ *in both Positions 3 and 2.*

Clearly the principle just enunciated is insufficient in these cases, which must be resolved according to the PRINCIPLE OF RELATED WORDS (para. 10b). Thus, for example, *discrimination*, *invigilation* and *delineation*, all with /i – i – i/, have the NON-TONIC STRONG stress on Position 2 and hence p.r.s.p. ◡o◡, since that position corresponds to the tonic syllable in the related words *discriminate*, *invigilate* and *delineate*. Conversely it is Position 3 which is marked as strong in *imitability* /i – i – ə/, *vindicability* /i – i – ə/ and *civilization* /i – i – ai/, that position corresponding to the tonic syllable in the related *imitate*, *vindicate* and *civilize*; *imitability*, *vindicability* and *civilization* therefore have p.r.s.p. o◡◡.

32. Words with pre-tonic sequences of three syllables the first of which is a separable monosyllabic prefix are not considered under p.r.s.p. ◡o◡, though such words are sometimes assimilated to this p.r.s.p. Our reasons for this decision are given in para. 26.

3 2 1
Pattern o◡◡

33. Examples: *equalization*, *instrumentality*, *adipocere*, *falsification*, *utilitarian*, *certification*, *stabilization*, *hybridization*, *variability* 41).

34. Vowel distribution:

Position 3.	FORTIS	All except /ɔi/
	LENIS	i
Position 2.	FORTIS	(e) (æ) (ɔ) (ai)
	LENIS	i ə u o
Position 1.	FORTIS	iː e æ ɑː ɔ ɔː ʌ əː ai (au) (ɛə)
	LENIS	i ə u o

This distribution can theoretically provide eight vowel sequence types of which the following have been recorded:-

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41) In accordance with our statement in para. 15, EPD /iə/ in this word is taken to be dissyllabic; but see footnote 36.

(a) FORTIS plus LENIS plus LENIS: very common, e.g. *edification*; vowel quality/stress correlation normal in all positions.

(b) FORTIS plus LENIS plus FORTIS: common, e.g. *alimentation*. See paras. 35 and 20 for weak FORTIS vowel in Position 1.

(c) LENIS plus LENIS plus LENIS: fairly common, e.g. *simplification*. See paras. 36 and 31 for strong LENIS vowel in Position 3.

(d) LENIS plus LENIS plus FORTIS: not very common, e.g. *improvisation*. See paras. 35 and 20 for the weak FORTIS in Position 1 and paras. 36 and 31 for the strong LENIS in Position 3.

(e) FORTIS plus FORTIS plus LENIS: very rare. See para. 37 for complete list of examples.

(f) LENIS plus FORTIS plus LENIS: one word only. See para. 37.

35. Although the majority of vowel sequences said with p.r.s.p. o◡◡ present a LENIS vowel in Position 1, FORTIS vowels cause no difficulty by their frequent appearance since that position has been shown to be weak irrespective of vowel quality 40). Nevertheless there is a marked tendency in Position 1 to replace the FORTIS vowel by a LENIS vowel, usually /ə/ but occasionally /i/. Thus for example EPD gives a variant /ə/ for FORTIS /e/ in *instrumentality*, for FORTIS /æ/ in *elephantiasis*, for FORTIS /ɔ/ in *Aristotelian*, for FORTIS /ɔː/ in *Senegalese*, and a variant /i/ for FORTIS /ai/ in *civilization* and *stabilization*. Of the three diphthongs listed in Position 1, only /ai/ is of common occurrence, /au/ and /ɛə/ being found once each, in the "odd" words *daffadowndilly* and *arrière-ban* respectively.

36. The problems created by the occurrence in Position 3 of LENIS /i/ with a NON-TONIC STRONG stress and followed in Position 2 (a) by a LENIS vowel other than /i/ and (b) by LENIS /i/ have been fully dealt with in para. 31. See also para. 26 where we give our reasons for excluding from p.r.s.p. o◡◡ those words with pre-tonic sequences of three syllables the first of which is a separable prefix, even though such words may sometimes be assimilated to p.r.s.p. o◡◡.

37. We have noted from EPD nine words which are said with p.r.s.p. o◡◡ and which must be regarded as anomalous. Of these, eight show a FORTIS vowel in Position 2 as well as in Position 3, and one, *diphthongization*, has FORTIS /ɔ/ in weak Position 2 and LENIS /i/ in strong Position 3. The nine words are:- *diphthongization* /i – ɔ – ai/, *Penthesilea* /e – e – i/, *metempsychosis* /e – e – i/, *encephalitis* /e – e – ə/, *enchiridion* /e – ai – ə/, *anfractuosity* /æ – æ – u/, *fanfaronade* /æ – æ–ə/,

phantasmagoria /æ – æ – ə/, *Constantinople* /ɔ – æ – i/. If /ə/ is elided from Position 1 in *enchiridion*, as it can well be, the dissyllabic /e – ai/ is quite normal for the p.r.s.p. o⌣ with which the word is then said.

4 3 2 1
Pattern oo⌣⌣

38. Examples: *denationalization, pre-signification, remodification, disqualification, impenetrability, misrepresentation, transmogrification, unalterability, co-instantaneity.*

39. Vowel distribution:

Position 4.	FORTIS	iː (e) (æ) (ʌ) (ou)
	LENIS	i
Position 3.	FORTIS	All except /iː uː au ɔi iə uə/
	LENIS	(i)
Position 2.	LENIS	i ə u
Position 1.	FORTIS	(e) ai
	LENIS	i ə

Of the eight vowel sequence types afforded by this distribution all but one, LENIS plus LENIS plus LENIS plus FORTIS, are exemplified in EPD:-

(a) FORTIS plus FORTIS plus LENIS plus LENIS: e.g. *re-edification.*
(b) FORTIS plus FORTIS plus LENIS plus FORTIS: e.g. *decentralization.*
(c) LENIS plus FORTIS plus LENIS plus LENIS: e.g. *incorrigibility.*
(d) LENIS plus FORTIS plus LENIS plus FORTIS: e.g. *disorganization.*
(e) LENIS plus LENIS plus LENIS plus LENIS: e.g. *inimitability.*
(f) FORTIS plus LENIS plus LENIS plus LENIS: e.g. *devitrification.*
(g) FORTIS plus LENIS plus LENIS plus FORTIS: e.g. *recrystallization.*

In the first of these vowel sequence types the vowel quality/stress correlation is normal in all positions; the apparent abnormalities of the other sequences are dealt with in the following paragraph.

40. All words found in EPD and said with this p.r.s.p. begin with a separable monosyllabic prefix, the prefixes noted being:- *de-, pre-, re-, dis-, in* (*im*)-, *mis-, self-, trans-, un-, sub-, co-*; of these only the first six, in /iː/ and /i/, occur in any number. In view of this structure of the words here under review, p.r.s.p. oo⌣⌣, like oo⌣, must be considered as a composite pattern, made up in this case of o plus o⌣⌣. This analysis of p.r.s.p. oo⌣⌣ entails consequences somewhat similar

to those which resulted from the parallel analysis of p.r.s.p. oo⌣ (para. 25). Firstly Position 3 carries a NON-TONIC STRONG stress even when occupied by LENIS /i/ 42) and when the vowel sequence FORTIS plus LENIS /i/ plus LENIS plus vowel appears to suggest p.r.s.p. o⌣⌣⌣; examples of this are *presignification* /iː – i – i – i/ and *co-instantaneity* /ou – i – ə – ə/. Secondly LENIS /i/ in Position 4 has a NON-TONIC STRONG stress even though the vowel sequence LENIS /i/ plus FORTIS plus LENIS plus vowel at first sight indicates p.r.s.p. ⌣o⌣⌣, as in *impenetrability* /i – e – i – ə/ and *disqualification* /i – ɔ – i – i/. A further outcome of splitting up p.r.s.p. oo⌣⌣ is that a FORTIS vowel is in no way irregular in Position 1 since the comparable position in p.r.s.p. o⌣⌣ also allows that possibility. In point of fact however only one such occurrence of a FORTIS vowel other than /ai/ has been noted, namely /e/ in *misrepresentation* and this, as EPD shows, has a variant pronunciation with LENIS /ə/.

41. In view of our dislike for a succession of two NON-TONIC STRONG stresses (paras. 24 and 26), there is a marked tendency to replace one of the two NON-TONIC STRONG stresses occurring in Positions 4 and 3 by a WEAK stress. This reduction of stress most easily takes place in Position 4, especially when the prefix shows LENIS /i/ and little emphasis is placed on the meaning of the prefix. Thus, with Position 3 occupied by a FORTIS vowel 43), the resulting p.r.s.p. ⌣o⌣⌣ correlates normally with the vowel sequence LENIS /i/ plus FORTIS plus LENIS plus vowel, as in *inapplicability* /i – æ – i – ə/ and *disorganization* /i – ɔː – ə – ai/. Words with prefixes in /iː/ and a FORTIS vowel in Position 3 behave in much the same way. It is probable that when such words are said with p.r.s.p. ⌣o⌣⌣, FORTIS /iː/ in Position 4 is most times indistinguishable from LENIS /i/; this view is prompted by the EPD transcription of *reorganization* and similar words with /iː/ and /i/ equally possible in Position 4. Data concerning the remaining prefixes are insufficient to allow any firm conclusion to be drawn but the following points suggest that in these cases any change from p.r.s.p. oo⌣⌣ would be to ⌣o⌣⌣ rather than to o⌣⌣⌣. Firstly p.r.s.p. ⌣o⌣⌣ is much more common than o⌣⌣⌣; secondly o⌣⌣⌣ is a variant and not a basic p.r.s.p. (para. 59); thirdly a sequence of three WEAK stresses,

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42) See paras. 53–55 for further discussion of the occurrence of /i/ in Position 3.

43) See paras. 53–55 for consideration of those words which have a separable prefix in /i/ and the same vowel in Position 3.

as is shown in Positions 3, 2 and 1 of p.r.s.p. o⌣⌣⌣, is extremely rare: the only other p.r.s.p. exhibiting this feature are ⌣o⌣⌣⌣ and o⌣o⌣⌣⌣ of which we have found altogether but five doubtful examples (paras. 64, 65). When words of the kind we are discussing are assimilated to p.r.s.p. ⌣o⌣⌣ we believe that the best results are obtained if we regard that p.r.s.p. as ⌣ plus o⌣⌣, ⌣ being a contextual variant of o which is the basic p.r.s.p. for separable monosyllabic prefixes; likewise o⌣⌣⌣, if and when it occurs for words of the type under review, is best regarded as o plus ⌣⌣⌣, where the latter is a contextual variant of o⌣⌣ occurring only after a separable monosyllabic prefix. This interpretation of the two possible variants of the composite p.r.s.p. oo⌣⌣ is of course parallel with that suggested for the variants of the composite p.r.s.p. oo⌣ (para. 26).

42. The particular problem arising from the possibility of LENIS /i/ occurring simultaneously in Positions 4, 3 and 2 of this p.r.s.p. and the general problem of correlating this vowel with NON-TONIC STRONG stress in four-syllabled pre-tonic sequences, are discussed in paras. 53 to 55.

4 3 2 1
Pattern ⌣o⌣⌣

43. Examples: *electrification*, *syllabification*, *solidification*, *personification*, *communicability*, *coagulability*, *tuberculization*, *identification*, *diversification*.

44. Vowel distribution:

Position 4.	FORTIS	(æ) ai
	LENIS	i ə u o
Position 3.	FORTIS	e æ ɑ: ɔ ɔ: u: ʌ ə: ou ai iə
	LENIS	i
Position 2.	LENIS	i ə u o
Position 1.	FORTIS	ai (e) (æ)
	LENIS	i ə

The vowels, thus distributed, combine to give the following sequence types:-

(a) LENIS plus FORTIS plus LENIS plus LENIS: e.g. *calorification*; vowel quality/stress correlation normal in all positions.

(b) LENIS plus FORTIS plus LENIS plus FORTIS: e.g. *macadamization*; for weak FORTIS in Position 1, see para. 46.

(c) FORTIS plus FORTIS plus LENIS plus LENIS: e.g. *identification*; for weak FORTIS in Position 4, see para. 45.

(d) LENIS plus LENIS plus LENIS plus LENIS: e.g. *acidification*; for strong LENIS in Position 3, see paras. 53 and 54.

(e) LENIS plus LENIS plus LENIS plus FORTIS: only one doubtful word, *capitalization* / ə – i – ə – ai / which is often pronounced so that / æ – i – ə – ai / and p.r.s.p. o◡◡◡ result.

45. In Position 4 FORTIS /æ/ occurs in the one word *bacteriological* /æ – iə – i – ə/ where it is now sometimes replaced by LENIS /ə/. Thus the only FORTIS vowel which can be said to occur regularly in this position is the diphthong /ai/. We have already drawn attention several times to the distributional peculiarities of /ai/ and these we now summarize.

FORTIS / ai / *occurring with* WEAK *stress*

	(a) Position 1.
2 1 p.r.s.p. o◡	the only FORTIS diphthong regularly found though FORTIS pure vowels are common.
3 2 1 p.r.s.p. o◡◡	again the only common FORTIS diphthong; together with the FORTIS pure vowels that occur, shows a marked tendency to be replaced by a LENIS vowel.
All other relevant p.r.s.p.	only FORTIS vowel to occur.
	(b) Postion 3.
3 2 1 p.r.s.p. ◡o◡	only FORTIS vowel to occur regularly without the possibility of replacement by a LENIS vowel (para. 29(c)); always followed in Position 2 by a FORTIS vowel.
	(c) Position 4.
4 3 2 1 p.r.s.p. ◡o◡◡	only FORTIS vowel to occur and always followed in Position 3 by another FORTIS vowel.

FORTIS / ai / *occurring with* NON-TONIC STRONG *stress*

	(d) Position 2.
2 1 p.r.s.p. o◡	followed in Position 1 by FORTIS and LENIS

vowels; the former can often be replaced by LENIS, e.g. / ai – əː / becomes / ai – ə / in *bifurcation*, / ai – e / becomes / ai – i / in *Clytemnestra*.

3 2 1   3 2 1
p.r.s.p. oo⌣, ⌣o⌣ — always followed by a LENIS vowel.

(e) Position 3.

3 2 1
p.r.s.p. oo⌣ — always the vowel in a separable monosyllabic prefix (*di-*, *tri-*) and can be followed by a FORTIS vowel.

3 2 1   4 3 2 1   4 3 2 1
p.r.s.p. o⌣⌣, oo⌣⌣, ⌣o⌣⌣ — always followed by a LENIS vowel.

(f) Position 4.

4 3 2 1
p.r.s.p. o⌣o⌣ — only in words beginning with a separable dissyllabic prefix and always followed by a LENIS vowel.

The essential points of the preceding summary are threefold. Firstly FORTIS /ai/ is tolerated in weakly stressed positions much more readily than other FORTIS vowels. Secondly, if followed by a FORTIS vowel, /ai/ is always weakly stressed except when it occurs as the vowel in a separable monosyllabic prefix and when it appears in Position 2 of p.r.s.p. o⌣; the latter exception is an obvious outcome of the general principle that dissyllabic pre-tonic sequences always have p.r.s.p. o⌣ irrespective of vowel quality (para. 20); the former exception is due to the composite nature of p.r.s.p. oo⌣ (para. 24). Thirdly, subject to the two exceptions just mentioned, FORTIS /ai/ bears a NON-TONIC STRONG stress only when followed by a LENIS vowel. The general conclusion is that FORTIS /ai/, though of higher order than any LENIS vowel, ranks lower than all the other FORTIS vowels.

46. In Position 1, which is weak in all polysyllabic p.r.s.p. (para. 20), FORTIS /e/ and /æ/ have been found each in one word only, *experimentation* and *electro-magnetic* respectively; both /e/ and /æ/ are now frequently replaced by LENIS /ə/. Thus /ai/ is the only FORTIS vowel to occur at all frequently.

47. For the interpretation of this p.r.s.p., occurring as a variant of oo⌣⌣, especially when Position 4 of the latter pattern (equals separable monosyllabic prefix) shows LENIS /i/ or FORTIS /iː/, see

para. 41. For a discussion of the problem raised by the occurrence of LENIS /i/ in Positions 4, 3 and 2 of four-syllabled pre-tonic sequences in general and of this p.r.s.p. in particular, see paras. 53 to 55.

4 3 2 1
Pattern o‿o‿

48. Examples: a) *apprehensibility*, *prestidigitation*, *organizability*,
b) *reconsideration*, *irreproachability*, *unreliability*,
c) *interpenetration*, *autobiographic*, *over-estimation*, *isobarometric*.

49. Vowel distribution:

Position 4.	FORTIS	i: e æ (ɑ:) (ɔ) ɔ: u: ʌ ə: ou ai
	LENIS	i
Position 3.	FORTIS	(ɑ:)
	LENIS	i ə o
Position 2.	FORTIS	All except /ɑ: ɔi ɛə/
	LENIS	i
Position 1.	FORTIS	(ai)
	LENIS	i ə u o

16 vowel sequence types are possible for this distribution but only four occur in any number, with two others exemplified by one word each:-

(a) FORTIS plus LENIS plus FORTIS plus LENIS: e.g. *attitudinarian*; vowel quality/stress correlation normal in all positions.

(b) LENIS plus LENIS plus LENIS plus LENIS: e.g. *inadmissability*; for strong LENIS in Positions 4 and 2, see paras. 53 and 54.

(c) LENIS plus LENIS plus FORTIS plus LENIS: e.g. *ipecacuanha*; for strong LENIS in Position 4, see para. 55 (c).

(d) FORTIS plus LENIS plus LENIS plus LENIS: e.g. *artificiality*; for strong LENIS in Position 2, see para. 55(c).

(e) LENIS plus FORTIS plus LENIS plus LENIS: one word only, *disarticulation*. See para. 52.

(f) FORTIS plus LENIS plus LENIS plus FORTIS: again only one word, *volatilization*. See paras. 52 and 55(c).

50. From the examples quoted in para. 48, it will be seen that this p.r.s.p. is applicable (a) to words that are unitary, that is, having no separable prefix, (b) to words formed by the addition of a separable

monosyllabic prefix [44]) and (c) to words beginning with a separable dissyllabic prefix. Words of type (a) convincingly show that o◡o◡ must be regarded as a basic p.r.s.p., but for words of types (b) and (c) it is best regarded as a composite pattern, in the case of type (b) as a sequence o (equals separable monosyllabic prefix) plus ◡o◡, and in the case of type (c) as a sequence o◡ (equals separable dissyllabic prefix) plus o◡. Thus p.r.s.p. o◡ is the pattern appropriate for separable dissyllabic prefixes. All such prefixes listed from EPD [45]) show a normal correlation between o◡ and vowel quality: the vowel sequence is either FORTIS plus LENIS or LENIS /i/ plus LENIS other than /i/, in the latter of which sequences the initial /i/ is marked with the NON-TONIC STRONG stress since pre-tonically it ranks higher than any other LENIS vowel (para. 31).

51. There appears to be some tendency to assimilate this pattern to p.r.s.p. o◡◡◡, especially when Position 2 shows LENIS /i/: this is clearly the interpretation that must be placed upon the stress in EPD of words like *reconciliation* /e – ə – i – i/ and *artificiality* /ɑ: – i – i – i/; EPD likewise suggests o◡◡◡ for words having a FORTIS vowel in Position 2. In spite of this however it is our view that in all such cases o◡o◡ must be considered as their basic p.r.s.p. and that for words of type (a) o◡◡◡ is an optional variant of that pattern. As for words of type (b) when said with p.r.s.p. o◡◡◡, they are to be taken as having a sequence of o plus ◡◡◡, where the latter is a variant of ◡o◡ only possible when preceded by a separable monosyllabic prefix. Similarly words of type (c) said with p.r.s.p. o◡◡◡ are analysed as a sequence of o◡ (equals separable dissyllabic prefix) plus ◡◡, the latter being as we have already stated (para. 26) a variant of o◡ which is used exclusively after separable monosyllabic and dissyllabic prefixes. It is noteworthy that no attempt is ever made to weaken the stress on Position 4, striking evidence to support our statement (para. 20) that in any polysyllabic pre-tonic sequence only one of the two syllables most remote from the tonic syllable can be weakly stressed.

52. In Position 1 FORTIS /ai/ occurs in the one word *volatilization* /ɔ – ə – i – ai/ which has a variant pronunciation /vəlætilai-/; the

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[44]) Those listed from EPD for this p.r.s.p. are:- *pre-*, *re-*, *dis-*, *in*(*im*)-, *mis-*, *ex-*, *self-*, *mal-*, *trans-*, *un-*, *co-*.

[45]) *inter-*, *extra-*, *retro-*, *mono-*, *auto-*, *super-*, *multi-*, *circum-*, *over-*, *homo-*, *hydro-*, *iso-*.

vowel sequence of this variant correlates quite normally with the p.r.s.p. ⌣o⌣⌣ with which it is said. In Position 3 FORTIS /ɑː/ is found only in *disarticulation* /i – ɑː – i – u/; unlike the word *articulation* (para. 29), *disarticulation* appears never to have /ɑː/ replaced by /ə/ and must therefore be considered as anomalous. In Position 4 the diphthongs /ou/ and /ai/ occur only in separable prefixes, /ou/ in monosyllabic and dissyllabic, /ai/ in dissyllabic. In this position also LENIS /i/ most often belongs to a separable monosyllabic prefix though words of types (a) and (c), such as *individuality* and *interpenetration*, also sometimes show /i/ in Position 4.

53. We must now turn to the general problem already referred to in paras. 42 and 47, the problem presented by four-syllabled pre-tonic sequences in which Positions 4, 3 and 2 all show LENIS vowels 46). Before we deal with the problem in relation to our own word-lists we propose to demonstrate that, with the aid of our present knowledge of the structural features exhibited by p.r.s.p., all combinations of LENIS vowels that can occur in Positions 4, 3 and 2 are susceptible of unambiguous interpretation. We set out this problem in a theoretical form first since it may well be that EPD does not include all the words in which the difficulty arises.

(a) *Vowel sequence* /$\overset{4}{\text{i}}$ – $\overset{3}{\text{i}}$ – $\overset{2}{\text{i}}$/, *in which all three positions, by virtue of their vowel quality (para. 31), are potential bearers of* NON-TONIC STRONG *stress.*

(i) With Position 3 shown by the PRINCIPLE OF RELATED WORDS (para. 10b) to have a NON-TONIC STRONG stress this sequence represents

either p.r.s.p. oo⌣⌣ when Position 4 equals a separable monosyllabic prefix

or p.r.s.p. ⌣o⌣⌣ when Position 4 is not a separable monosyllabic prefix.

In both cases Position 2 is weakly stressed since not more than two NON-TONIC STRONG stresses can occur in succession and such a sequence of two NON-TONIC STRONG stresses is possible only

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46) Position 1 in such sequences is of course always weakly stressed irrespective of vowel quality (para. 20). It should be noted that LENIS vowels predominate in that position though FORTIS /ai/ occurs quite often (compare para. 45); the other FORTIS vowels are very rare.

initially in words beginning with a separable monosyllabic prefix.

(ii) With Position 2 shown by the PRINCIPLE OF RELATED WORDS (para. 10b) to have a NON-TONIC STRONG stress this sequence must represent p.r.s.p. o⌣o⌣. Position 3 is weakly stressed since two adjacent NON-TONIC STRONG stresses are only possible initially in a word (i.e. Positions 4 and 3 of four-syllabled pre-tonic sequence); and with Position 3 thus weak, Position 4 is strong since a succession of two WEAK stresses is not permitted initially in the word (para. 20).

(iii) This sequence is never correlated with p.r.s.p. o⌣⌣⌣: LENIS /i/ is impossible in Position 2 of that pattern (para. 57).

(b) *Vowel sequence* $/\overset{4}{\text{i}} - \overset{3}{\text{i}} - \overset{2}{\text{ə}}/$ 47) *in which Positions 4 and 3 only are potentially strongly stressed (para. 31).*

(i) With Position 3 shown by the PRINCIPLE OF RELATED WORDS (para. 10b) to have a NON-TONIC STRONG stress this sequence represents

either p.r.s.p. oo⌣⌣ when Position 4 equals a separable monosyllabic prefix.

or p.r.s.p. ⌣o⌣⌣ when Position 4 is not a separable monosyllabic prefix.

(ii) When Position 4 is not a separable monosyllabic prefix and Position 3 cannot be shown by the PRINCIPLE OF RELATED WORDS to be strong, this sequence represents p.r.s.p. o⌣⌣⌣. Occasionally Position 4 is shown to have a NON-TONIC STRONG stress by the PRINCIPLE OF RELATED WORDS (para. 10b).

(c) *Vowel sequence* $/\overset{4}{\text{ə}} - \overset{3}{\text{i}} - \overset{2}{\text{i}}/$ 47) *in which Positions 3 and 2 only are potentially strongly stressed (para. 31).*

This sequence must represent p.r.s.p. ⌣o⌣⌣. With Position 4 weak (para. 31), Position 3 is strong (para. 20) and Position 2 weak (para. 24).

(d) *Vowel sequence* $/\overset{4}{\text{i}} - \overset{3}{\text{ə}} - \overset{2}{\text{i}}/$ 47) *in which Positions 4 and 2 only are potentially strongly stressed (para. 31).*

This sequence must represent p.r.s.p. o⌣o⌣. With Position 3 weak (para. 31), p.r.s.p. oo⌣⌣ and ⌣o⌣⌣ are eliminated. P.r.s.p. o⌣⌣⌣ is

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47) The symbol /ə/ is here used for convenience to indicate LENIS vowel other than /i/.

likewise impossible: LENIS /i/ does not occur in Position 2 of that pattern. Quite often Position 2 could be shown to have a NON-TONIC STRONG stress by the PRINCIPLE OF RELATED WORDS (para. 10b).

(e) *Vowel sequence* $/\overset{4}{\text{i}} - \overset{3}{\text{ə}} - \overset{2}{\text{ə}}/$ 47).
Since Position 4 is the only potential bearer of a NON-TONIC STRONG stress (para. 31), this sequence must represent p.r.s.p. o◡◡◡, ◡◡◡◡ being impossible (para. 20).

(f) *Vowel sequence* $/\overset{4}{\text{ə}} - \overset{3}{\text{i}} - \overset{2}{\text{ə}}/$ 47).
Since Position 3 is the only potential placing of a NON-TONIC STRONG stress (para. 31) and since ◡◡◡◡ is impossible (para. 20) this sequence must represent p.r.s.p. ◡o◡◡.

The two remaining combinations $/\overset{4}{\text{ə}} - \overset{3}{\text{ə}} - \overset{2}{\text{i}}/$ 47) and $/\overset{4}{\text{ə}} - \overset{3}{\text{ə}} - \overset{2}{\text{ə}}/$ 47) do not and cannot occur: they would give rise to the impossible sequence of two WEAK stresses initially (para. 20).

54. It will be seen from the foregoing theoretical analysis that of the six vowel sequences only two, (a) and (b), are ambiguous in that they may each have more than one interpretation. In our word-lists vowel sequence $/\overset{4}{\text{i}} - \overset{3}{\text{i}} - \overset{2}{\text{i}}/$ has been correlated with p.r.s.p. oo◡◡ as for example in *inimitability* 48) (para. 53 (a) (i)) and with p.r.s.p. o◡o◡ in such words as *indivisibility*, *irresistibility* and *individuality* (para. 53 (a) (ii)). No examples of this vowel sequence correlating with p.r.s.p. ◡o◡◡ have been found. So far as we have been able to discover in EPD, vowel sequence $/\overset{4}{\text{i}} - \overset{3}{\text{i}} - \overset{2}{\text{ə}}/$ 47) correlates only with p.r.s.p. o◡◡◡, as for example in *systematization* (para. 53 (b) (ii)). The number of examples of these sequences found with each of their respective p.r.s.p. is extremely limited. For completeness we now give examples of the remaining four unambiguous vowel sequences analysed in para. 53; again examples are very rare.

(c) $/\overset{4}{\text{ə}} - \overset{3}{\text{i}} - \overset{2}{\text{i}}/$ 47) with p.r.s.p. ◡o◡◡: *acidification*, *solidification*.

(d) $/\overset{4}{\text{i}} - \overset{3}{\text{ə}} - \overset{2}{\text{i}}/$ 47) with p.r.s.p. o◡o◡: *inadmissability*, *inter-lineation*.

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48) This word most often appears to be said with the variant p.r.s.p. ◡o◡◡, for the interpretation of which see para. 41.

(e) /$\overset{4}{\text{i}}$ – $\overset{3}{\text{ə}}$ – $\overset{2}{\text{ə}}$/ [47] with p.r.s.p. o◡◡◡: *visualization* [49].

(f) /$\overset{4}{\text{ə}}$ – $\overset{3}{\text{i}}$ – $\overset{2}{\text{ə}}$/ [47] with p.r.s.p. ◡o◡◡: *capitalization* [50].

55. The very small number of words that present simultaneously LENIS vowels in Positions 4, 3 and 2 of p.r.s.p. oo◡◡, ◡o◡◡ and o◡o◡ indicates that in those words where vowel quality and stress cannot be immediately correlated by reference to the FORTIS/LENIS dichotomy, most times one of these three positions is occupied by a FORTIS vowel. The following analysis of all the different vowel sequences associated with the three p.r.s.p. we have mentioned not only makes that point clear but at the same time puts the problem discussed in para. 53 into its true perspective: in the majority of cases p.r.s.p. oo◡◡, ◡o◡◡ and o◡o◡ can be freely determined by the correlation of FORTIS vowel with NON-TONIC STRONG stress and of LENIS vowel with WEAK stress.

(a) P.r.s.p. oo◡◡. 36 different vowel sequences listed.
In Positions 4, 3 and 2
22 show FORTIS plus FORTIS plus LENIS;
10 show LENIS /i/ plus FORTIS plus LENIS where the initial LENIS /i/ is the vowel in a separable monosyllabic prefix;
3 show FORTIS plus LENIS /i/ plus LENIS of which Position 3 LENIS /i/ is strong by reference to the PRINCIPLE OF RELATED WORDS: for example *presignification* (related word *signify*), *re-crystallization* (*crystallize*), *co-instantaneity* (*instant*);
1 shows /i – i – i/: cf. paras. 53 (a) (i) and 54.

(b) P.r.s.p. ◡o◡◡. 41 different vowel sequences listed.
In Positions 4, 3 and 2
36 read LENIS plus FORTIS plus LENIS;
2 read FORTIS /ai/ plus FORTIS plus LENIS where the initial /ai/ does not belong to a separable monosyllabic prefix and is followed by another FORTIS vowel: for example *identification*. See para. 45;
1 reads /ə – i – i/ [47]: cf. paras. 53(c) and 54;
1 reads /ə – i – ə/ [47]: cf. paras. 53(f) and 54.
The remaining vowel sequence is the anomalous /æ – iə – i – ə/ of *bacteriological* (para. 45).

(c) P.r.s.p. o◡o◡. 101 different vowel sequences listed.

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[49] EPD /uə/ taken as dissyllabic: see para. 15.

[50] EPD main pronunciation: the frequent variant pre-tonic vowel sequence /æ – i – ə – ai/ correlates normally with p.r.s.p. o◡◡◡: see para. 53b(ii).

In Position 4, 3 and 2
50 have FORTIS plus LENIS plus FORTIS;
30 have LENIS /i/ plus LENIS plus FORTIS. With Position 2 strong on account of its FORTIS character, the NON-TONIC STRONG stress on LENIS /i/ in Position 4 is forced by the considerations outlined in para. 53 (a) (ii): e.g. *ipecacuanha*. Note also that LENIS /i/ in Position 4 is very frequently the vowel in a separable monosyllabic prefix. Examples: *irreproachability*, *misappropriation*;
16 have FORTIS plus LENIS plus LENIS /i/ of which Position 2 LENIS /i/ is strong by reference to the PRINCIPLE OF RELATED WORDS. Examples: *maladministration* (*administer*), *multi-millionaire* (*million*), *artificiality* (*artificial*). Only exception noted: *volatilization* but see para. 52;
3 have /i – i – i/: cf. paras 53(a) (ii) and 54;
1 has /i – ə – i/ 47): cf. paras. 53(d) and 54.
The remaining vowel sequence is the anomalous /i – ɑː – i – u/ of *disarticulation* (para. 52).

4 3 2 1
Pattern o⌣⌣⌣

56. Examples: *heliogravure*, *systematization*, *spiritualistic* 49), *visualization* 49), *generalization*, *heterogeneity*, *regularization*, *secularization*, *septuagenarian* 49), *characterization*, *palatalization*, *onomatopeia*.

57. Vowel distribution:

Position 4.	FORTIS	iː e æ ɔ
	LENIS	i
Position 3.	LENIS	i ə u o
Position 2.	LENIS	ə u o
Position 1.	FORTIS	ai
	LENIS	i ə o

58. In EPD only the 12 examples quoted have been noted in which p.r.s.p. o⌣⌣⌣ is obligatory, though this pattern is sometimes used as an optional variant for certain words (para. 48(a)) to which p.r.s.p. o⌣o⌣ is basic (para. 51). None of the twelve words begins with a separable monosyllabic prefix; hence only one of Positions 4 and 3 can bear a NON-TONIC STRONG stress (para. 24) but at the same time one of these two positions must have such a stress since an initial sequence of two

WEAK stresses is not permitted (para. 20). In all but three words, *systematization, spiritualistic*, and *visualization*, the NON-TONIC STRONG stress correlates normally with Position 4 by virtue of a FORTIS vowel. For *systematization, spiritualistic* and *visualization*, LENIS /i/ in Position 4 is shown to be strong by reference to the PRINCIPLE OF RELATED WORDS: compare them with *systematize, spiritual*, and *visualize* respectively. Alternatively, for *visualization* /i – u – ə – ai/, this p.r.s.p. is forced for reasons given in paras. 31 and 53(e). The WEAK stress in Position 2 of all twelve words is correlated with the three LENIS vowels, /ə/, /u/ and /o/ which for all practical purposes (para. 19) never take a NON-TONIC STRONG stress in pre-tonic sequences.

59. There now arises the question of the status to be accorded to this p.r.s.p. In our view it is best looked upon not as a basic pattern but as the variant of the basic p.r.s.p. o◡o◡ which is compulsory when Position 2 exhibits a LENIS vowel incapable of carrying a NON-TONIC STRONG stress. Our reasons for this view are:-

(i) P.r.s.p. o◡o◡ is much more common than o◡◡◡.

(ii) The sequence of two WEAK stresses in Positions 3 and 2 is very rare. The only other patterns which exhibit this feature are pre-tonic r.s.p. ◡o◡◡◡ and o◡o◡◡◡. Of the former we have discovered only four examples (para. 64) and of the latter only one (para. 65); and, as we shall see, all the examples of these two p.r.s.p. have variant pronunciations which, by correlating quite normally with other p.r.s.p., eliminate the sequence of two WEAK stresses in Positions 3 and 2. The same also holds good for all the words given in para 56. Thus *heliogravure* can be pronounced /hiːljogrə-/, *systematization* /sistmətai-/, *spiritualistic* /spiritju-/, *visualization* /viʒwəlai-/, *generalization* /dʒenrəlai-/, *heterogeneity* /hetrədʒi-/, *regularization* /reg(j)lərai-/, *secularization* /sek(j)lərai-/, *septuagenarian* /septwədʒi-/, *characterization* /kæriktrai-/, *palatalization* /pælətlai-/, all correlating regularly with p.r.s.p. o◡◡, and *onomatopeia* /ɔnomæto-/ correlating with p.r.s.p. o◡o◡. Of all these variant pronunciations perhaps that of the last word is the most significant since by its reversion to p.r.s.p. o◡o◡ it underlines the affinity between that pattern and p.r.s.p. o◡◡◡, an affinity already suggested by the occurrence of the latter as an optional variant of p.r.s.p. o◡o◡ (para. 51). Clearly p.r.s.p. o◡◡◡, with its two WEAK stresses in Positions 3 and 2 is recognised as a stress pattern that does not conform to our usual pre-tonic stress habits.

(iii) P.r.s.p. o⌣⌣⌣ is the only pattern in which the sharp differentiation between /i/ and the other LENIS vowels, compulsory in all strong positions of all p.r.s.p., is extended to a weakly stressed position. Certainly the absence of /i/ from Position 2 of p.r.s.p. o⌣⌣⌣ is no coincidence.

(iv) An interpretation on these lines is also possible for post-tonic r.s.p. ⌣⌣⌣o. Our statement of the basic r.s.p. of English words is therefore simplified twice over.

60. The number of words given in EPD with five pre-tonic syllables is very limited (13) and only one word has been noted with six pre-tonic syllables. Though the data they afford are meagre, all these words nonetheless will be seen to conform to the principles that we have already established in shorter pre-tonic sequences.

5 4 3 2 1
61. *Pattern* o⌣o⌣⌣. Five examples have been listed.

(a) *incommensurability* /i – ə – e – ə – ə/. LENIS /ə/ correlates normally with WEAK stress in Positions 4, 2 and 1, FORTIS /e/ with NON-TONIC STRONG stress in Position 3. LENIS /i/ in Position 5 has a NON-TONIC STRONG stress since it is the vowel in a separable monosyllabic prefix and since a sequence of two WEAK stresses initially in a word is impossible (para. 20).

(b) *unintelligibility* /ʌ – i – e – i – ə/, *undesirability* /ʌ – i – ai – ə – ə/ (51). These words show a simple correlation between stress and vowel quality. Position 5 in both words equals a separable monosyllabic prefix.

(c) *internationalization* /i – ə – æ – ə – ai/. WEAK stress shows a normal correlation with LENIS /ə/ in Position 4 and 2 and with FORTIS /ai/ in Position 1 (para. 45). Position 3 is strong by its FORTIS vowel and Position 5 LENIS /i/, with Position 4 shown to be weak, must also be strong (para. 20). Furthermore Positions 5 and 4 constitute a separable dissyllabic prefix in which Position 5, and not 4, is marked as strong by the ranking of LENIS vowels (para. 31).

(d) *individualistic* /i – i – i – u – ə/ (49). Positions 2 and 1 are weak by vowel quality. LENIS /i/ in Position 3 is strong by reference to the

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(51) Note that /ai/ in this word has a NON-TONIC STRONG stress and is followed by a LENIS vowel: see para. 45.

PRINCIPLE OF RELATED WORDS (compare the tonic syllable in *individual*) and the weakness of Position 4 LENIS /i/ (para. 24) and the strength of Position 5 LENIS /i/ (para. 20) are thereby forced. P.r.s.p. o◡o◡◡ in words (a) and (b) is readily analysed as a sequence of o (equals separable monosyllabic prefix) plus ◡o◡◡ and in word (c) as a sequence of o◡ (equals separable dissyllabic prefix: see para. 50) plus o◡◡. Thus for the one word *individualistic* only can o◡o◡◡ not be shown to be a composite pattern. Now though EPD does not give it, this word often has a variant pre-tonic pronunciation /individʒwə-/ with vowel sequence /i – i – i – ə/ and p.r.s.p. o◡o◡. The suggestion is that we could simplify our statement of p.r.s.p. by adopting this variant pronunciation: o◡o◡◡ could then be considered always to be a composite pattern. It seems possible however that EPD may not include all words for which o◡o◡◡ appears to be the requisite p.r.s.p., and some of such words may not be susceptible of an alternative interpretation on the lines of that suggested for *individualistic*. In these circumstances and especially in view of the remarks on *individualization* that are to follow (para. 65), we prefer to retain o◡o◡◡ as a basic p.r.s.p., appropriate for words of the type *individualistic* but not, of course, for the remaining words quoted above.

5 4 3 2 1

62. *Pattern* o◡◡o◡. The only example of this p.r.s.p. listed from EPD is *intercommunication* /i – ə – ə – uː – i/. The NON-TONIC STRONG stress in Position 2 correlates normally with FORTIS /uː/. Since two WEAK stresses initially in a word are not possible (para. 20) and since Positions 4 and 3 both have LENIS /ə/ which is always weakly stressed in pre-tonic sequences, LENIS /i/ in Position 5 is marked with a NON-TONIC STRONG stress (para. 31). It is furthermore the first vowel in a separable dissyllabic prefix for which o◡ is the normal p.r.s.p. (para. 50). Thus o◡◡o◡ is here to be regarded as a composite pattern made up of basic p.r.s.p. o◡ and ◡o◡.

5 4 3 2 1

63. *Pattern* oo◡o◡. Three examples have been noted in EPD: *irreconcilability* /i – e – ə – ai – ə/, *incomprehensibility* /i – ɔ – i – e – ə/, *incontrovertibility* /i – ɔ – ə – əː – ə/. In all three words the NON-TONIC STRONG stress in Positions 4 and 2 corresponds to a FORTIS vowel and the WEAK stress in Positions 3 and 1 to a LENIS vowel. LENIS /i/ occurs in Position 5 as the vowel in a separable monosyllabic prefix. Its NON-TONIC STRONG stress is therefore quite usual (para. 24) and oo◡o◡ is

best regarded as a composite p.r.s.p., o (equals separable monosyllabic prefix) plus o⌣o⌣. As frequently happens with separable monosyllabic prefixes, especially those in /i/ (see para. 41, for example) the stress on Position 5 may be weakened as also may that on Position 2. The resulting patterns ⌣o⌣⌣⌣, ⌣o⌣o⌣ and oo⌣⌣⌣ are to be interpreted as composite, with ⌣ and o⌣⌣⌣ optional variants respectively of basic p.r.s.p. o and o⌣o⌣.

5 4 3 2 1
64. *Pattern* ⌣o⌣⌣⌣. Four examples have been listed.

(a) *materialization* /ə – iə – i – ə – ai/, (b) *americanization* /ə – e – i – – ə – ai/, (c) *anathematization* /ə – æ – i – ə – ai/, (d) *industrialization* /i – ʌ – i – ə – ai/ 52). All four words show a FORTIS vowel in strong Position 4; Position 3, LENIS /i/ in all cases, and Position 2, LENIS /ə/ in all cases, have a normal correlation between vowel quality and WEAK stress; for FORTIS /ai/ occurring with WEAK stress in Position 1 see para. 45; in Position 5 LENIS /ə/ in words (a), (b) and (c) correlates normally with WEAK stress, as does LENIS /i/ in word (d) since it is not the vowel in a separable monosyllabic prefix. Reference has already been made (para. 59) to the rare feature, presented by this p.r.s.p., of two successive WEAK stresses in Positions 3 and 2. P.r.s.p. o⌣⌣⌣ also exhibits this sequence and in that case we are able to interpret o⌣⌣⌣ as a compulsory variant of o⌣o⌣ when Position 2 has a LENIS vowel which pretonically can never bear a NON-TONIC STRONG stress. The interpretation of p.r.s.p. ⌣o⌣⌣⌣ as a compulsory variant of ⌣o⌣o⌣ in similar circumstances might be possible if examples of the latter pattern could be found; we have ourselves listed no examples in which ⌣o⌣o⌣ occurs except as a variant itself of p.r.s.p. oo⌣o⌣ (para. 63). At the same time we should note the modern tendency to pronounce the above four words in a way such that a more common and more regular p.r.s.p. results. Thus *materialization* /mətiərjəlai-/, *americanization* /əmeriknai-/, *anathematization* /ənæθmətai-/, *industrialization* /indʌstrjəlai-/, all with p.r.s.p. ⌣o⌣⌣ and normal correlations between stress and vowel quality.

6 5 4 3 2 1
65. *Pattern* o⌣o⌣⌣⌣. The only example we have discovered is *individualization* /i – i – i – u – ə – ai/ 53). LENIS /i/ in Position 4 is

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52) EPD /iə/ in this word and the second occurrence of /iə/ in EPD *materialization* taken as dissyllabic: see para. 15.

53) EPD /uə/ taken to be dissyllabic: see para. 15.

marked as strong by reference to the PRINCIPLE of RELATED WORDS (compare the tonic syllable of *individual*), and since ⌣⌣ does not occur initially in words (para. 20), LENIS /i/ in Position 6 is also strongly stressed. The correlations between WEAK stress and vowel quality are normal in Positions 5, 3, 2 and 1. Again we note the unusual sequence of two WEAK stresses in Positions 3 and 2 and again such a sequence is avoided if we follow the modern tendency to pronounce this word /individʒwəlai-/ with p.r.s.p. o⌣o⌣⌣. This we propose to do since we are convinced that the number of words, said with o⌣o⌣⌣⌣ but not given in EPD, is very small and it may well be that all such words, like *individualization*, can be pronounced so that p.r.s.p. o⌣o⌣⌣ and not o⌣o⌣⌣⌣ results. We therefore do not consider the latter to be a basic p.r.s.p. of English words.

66. We have analysed all the p.r.s.p. of English words having polysyllabic pre-tonic sequences and are now in a position to assess the stress values in monosyllabic pre-tonic sequences (para. 10c).

(a) It has already been stated (para. 24) that monosyllabic pre-tonic sequences when equal to a separable prefix, as for example in *re-marry*, *inglorious*, are to be considered to have basic p.r.s.p. o. When however little importance is attached to the meaning of the prefix, this NON-TONIC STRONG stress is very often weakened, no matter what the character, FORTIS or LENIS, of the vowel in the prefix. Such weakening is of course in accordance with the tendency, noted many times in the above analysis, to avoid whenever possible a sequence of two strong stresses, in this case a sequence of NON-TONIC STRONG stress and TONIC STRONG stress. But words of the type with which we are here concerned must have a NON-TONIC STRONG stress on the prefix if the latter's meaning is given any prominence; we must therefore look upon p.r.s.p. ⌣ in *re-marry* and the like as a variant, and not a basic, p.r.s.p. COMPOUND words such as *arm-chair*, *outsider*, *king-pin*, the first element of which constitutes a monosyllabic pre-tonic sequence, behave in the same way: they have basic p.r.s.p. o with the possibility of ⌣ as a variant, irrespective of the vowel quality, FORTIS or LENIS /i/ or /u/, in the pre-tonic syllable. This NON-TONIC STRONG stress on the first element of such COMPOUNDS words is of course normal in that it represents the carry over of the TONIC STRONG stress from, for example, the SIMPLE words *arm*, *out*, *king* (see para. 10b and footnote 18).

(b) It remains for us to consider those words in which the monosyllabic pre-tonic sequence does not equal a separable prefix or a complete word. Our analysis of p.r.s.p. appropriate to polysyllabic pre-tonic sequences has conclusively shown that Position 1 in such sequences always has WEAK stress whatever the vowel quality, LENIS or FORTIS, there occurring. From this we infer that words with a monosyllabic pre-tonic sequence not equal to a separable prefix or complete word have basic p.r.s.p. ⌣ whether the vowel is LENIS as in *adjudicate* or FORTIS as in *bacteria, participate, sulphuric*. With the establishment of p.r.s.p. ⌣ for such pre-tonic sequences, p.r.s.p. o⌣ found in words beginning with a separable monosyllabic prefix, such as *immortality*, and *disappearance* can be analysed as a sequence of basic p.r.s.p. o and ⌣. Likewise p.r.s.p. o⌣⌣, when occurring in a word like *intercollegiate* (para. 31) is best taken as a sequence of basic p.r.s.p. o⌣ (equals separable dissyllabic prefix: para. 50) and basic p.r.s.p. ⌣.

(*to be concluded*)

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SOME MUTILATED ROOTS IN ETHIOPIC

In reviewing ¹) Marcel Cohen's *Essai comparatif sur le vocabulaire et la phonétique du chamito-sémitique* ²) I pointed out the difficulties that confronted the author in his various comparisons. One of the difficulties derives from the fact that some of the languages of the Hamito-Semitic group, as in the case of Berber and Cushitic, have no traceable history. Because of this lack of history there are missing links in the development of certain sounds in the root composition, and as a result of it, we are unable to find an adequate identification of various roots. The cited examples of Gurage *un* "stone" and of *sut* "eight" (*ib.*) going back to Semitic *ʾbn* and *smn* respectively were a case in point. The identification of these roots was made plausible because we were able to trace the development of the labials, laryngeals and dentals in South Ethiopic.

Turning to the domain of Ethiopic we find therein roots in the various languages that at first investigation can hardly be considered as going back to the same origin. This is particularly the case in comparing the roots of any North Ethiopic language with certain Gurage dialects, especially of the Western group. Without adequate knowledge of the phonetic development in these languages, it would seem a tour de force to derive alike sounding Ennemor roots *e ʾä* from *ʿṣw* "close", from *ʿḍ* "tree" and from *ḥqy* "crunch". Fortunately in the case of the various Ethiopic languages and dialects we have sufficient knowledge of the development of the labials, liquids, dentals and other phonemes to enable us to establish the sound basis for our comparisons. The purpose of this study is to prove that an adequate knowledge of the missing links within a linguistic group enables us to compare roots that at first sight seem impossible to trace back to the same origin. The reader will find here an etymological investigation

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¹) The languages are abbreviated as follows: A. = Aymellel, Amh. = Amharic, Arg. = Argobba, C. = Chaha, E. = Eža, Ed. = Endegeň, En. = Ennemor, G. = Geez, Gaf. = Gafat, Go. = Gogot, Gt. = Gyeto, Gur. = Gurage, M. = Muher, Ms. = Masqan, S. = Selti, Te. = Tigre, Tna. = Tigrinya, W. = Wolane, Z. = Zway.

²) *Language* 25 (1949) 316.

of thirty-two roots preceded by an analysis of the various phonetic developments justifying the proposed etymologies. For the benefit of the reader I should like to mention briefly that the Ethiopic languages of the North are those of Geez (no longer spoken), Tigre, and Tigrinya, whereas the South Ethiopic group includes Amharic, the national language, Harari, Gafat and Gurage. Within Gurage there are three groups; 1) Eastern Gurage including Selti, Wolane, Ulbarag, Inneqor and Zway; 2) Western Gurage including Chaha, Eža, Ennemor, Endegeň, Gyeto, Muher, Masqan and Gogot; 3) Northern Gurage with Aymellel as its only representative. The greatest phonetic changes occur in Ennemor and Endegeň [3]).

I. Analysis of the phonetic developments

1. *Labials*

1.1. Alternance *m*:*b*. The labial *m* alternates occasionally with *b*. Examples: *zänäbä-m* (C.) "rain", *zännäbä-m* (M.G.A.), *zälämä* (S.W.), *zänäṁä* [4]) (Gt.); *g'ättämä-m* (M.) "sell on credit", *g'ätäbä-m* (C.); *matäb* (En.) "thread on the neck", *matäm* (M.); *abä-m* (Ms.G.A.) "give", *amä* (Ed.), *aṁä* (Gt.); *märaga* (C.En.) "clavicle", *märragga* (M.), *männagga* (E.), *bäranga* (Gt.), *bärranga* (Ms.); *šabä-m* (C.E.Ms.Go.) "drag", *šaṁä* (En. Ed. Gt.); *däm* (Gur.) "blood", *daṁ* (Gt.).

1.2. Alternance *m*:*w*:*zero*. The labial *m* occasionally becomes *w* and *zero*. Examples: *amänägä* (Gt.) "escape", but *awänägä* (Ed.); *gum* (Ed.) "fog", but *gũwä* (En. Gt.); *dämam* (Gur.) "master", *dam* and *dãw* (Ed.); *a(g)gämä* (Gur.) "to cup", but *akkäwä* (Ed.); *däm* (Gur.) "blood", but *däw* (Ed.); *nund* (C.En.) "expensive", from **numd*, but *nud* (Gt.), *nũd* (Ed.); *näk'ämä-m* (C.) "ride", *näk'äṁä* (Gt.), *näk'äb̠ä* (En.), *näkkäwa* (Ed.), from the root *lg'm* "bridle" [5]).

1.3. Alternance *b*:*b̠*:*w*:*zero*. The labial *b* passing through the spirant *b̠* becomes occasionally *w* and *zero*. Examples: *nəb* (C.E.M.Ms.) "bee", but *nəb̠* (En.), *nəw* (Ed.); *ṭub* (Ms.S.W.Z.) "breast", but *ṭəw* (E.), *ṭu* (C.En.Ed.Gt.); *qəb* (C.E.Gt.) "butter", but *ʾəw* [6]) (Ed.); *gulbät* (Ms.

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[3]) The Gurage, Harari and Argobba vocabularies come from material in my own files.

[4]) The sound *ṁ* is pronounced with half closed lips; it sounds like *b* or *m*.

[5]) It is tempting to connect this root with Semitic *rkb* "ride", but the derivation from *lg'm* is preferable.

[6]) For *q* : *ʾ*, see § 4.1.1.

Go.A.) "knee", but *gunōt* (Ed.); *täbba-m* (E.M.) "be cruel", but *təwä* (C.M.A.) "cruel"; *aḇ*^{w}*ä* (Go.) "dew", but *awa* (C.E.En.M.); *gäbäya* (Gur.) "market", but *geyä* (Ed.); *annäbät* (E.) "tongue", but *anäḇäd* (En.), *anǟd* (Ed.); *äbabut* (Go.A.) "round-worm", but *äwawt* (Ed.), *əwawət* (E.), *aḇawt* (M.).

2. *Dentals and Sibilants*

2.1. The Geez *ḍ* is represented in Te. Tna. as *ṣ*. Examples: *ḍäḥay* (G.) "sun", *ṣäḥay* (Tna.); *ḍämädä* (G.) "put the yoke", *ṣämädä* (Tna.), *ṣämda* (Te.); *ḍäräfä* (G.) "slander, revile", *ṣäräfä* (Tna.); *ḍäbäṭä* (G.) "seize", *ṣäbṭa* (Te.); *ḍägam* (G.) "left", *ṣägam* (Tna.).

2.2. Semitic and North Ethiopic *ṣ* becomes *ṭ* in the South Ethiopic languages 7). Examples: *q*^{w}*äṣəl* (G.) "leaf", *q*^{w}*åṣli* (Tna.), but *qəṭäl* (Amh.Ms.Go.A.), *qəṭal* (Arg.), *quṭṭi* (Har.), *qəṭäy* (Z.); *q*^{w}*åṣärä* (Tna.) "count", but *q*^{w}*åṭṭärä* (Amh.), *q*^{w}*åṭṭära* (Arg.), *qoṭṭärä-m* (A.Go.), *q*^{w}*iṭṭärä* (Gaf.); *rägäṣä* (G.Tna.) "kick", but *räggäṭä* (Amh.), *räggäṭa* (Arg.), *rägäṭa* (H.), *räggäṭä-m* (Go.A.).

3. *Velars*

3.1. The velar *k* passing through the spirant *ḵ* can also become *h*. Thus, *färäkä* (S.W.) "be able", *färräḵä-m* (M.), *färrähä-m* (Go.), *färrähä* (Ms.); *kumäṭṭäṭä-m* (Go.A.) "be acid", *ḵŭmäṭṭäṭä-m* (M.), *humäṭṭäṭä* (Ms.), *humäṭäṭä* (W.Z.); *mäkärä* (En. Gt.) "advise", *mäḵärä-m* (C.), *mähärä* (Z.); *kərrä* (Go.A.) "arm", *ḵərrä* (M.), *ḵənnä*, *hənnä* (Ms.), *həri* (W.); *kana* (Go.A.) "bark of tree", *ḵana* (M.), *hāna* (Ms.), *hānä* (Ed.).

4. *Emphatics*

4.1. Alternance between the emphatics and the glottal stop.

4.1.1. Ethiopic *q* is occasionally represented as ʾ in the various Gurage dialects, but mainly in En. Ed. and Gogot 8). Thus, *qäpa-m* (C.) "anoint", *qäbba-m* (E.), but *ʾäpa* (En.); *ləq* (M.) "big", but *ləʾ* (Go.); *ṭämäqä* (S.) "brew", but *ṭämmä ʾä-m* (Go.); *qəb* (Gur.) "butter", but *ʾəb* (En.), *ʾəw* (Ed.); *qəräqärä-m* (C.) "confuse", but *ʾəra ʾarä* (Ed.); *ṭänäqä-m* (C.) "be dry", *därräqä* (Amh.), but *ṭärrä ʾä-m* (Go.); *alläqä*

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7) The affricate *ṣ* is used in North Amharic and in Gafat.

8) For a possible Cushitic influence, see *Language* 28 (1952) 68.

(Ms.), "be ended", but *allä ʾä-m* (Go.), *anä ʾä* (En.); *faqä-m* (C.) "erase", but *fa ʾä* (En.Ed.); *ṭänäqä* (C.) "be frightened", but *ṭännä ʾä-* (M.), *dännä ʾä-* (En.Ed.).

4.1.2. Ethiopic *ṭ* is occasionally represented as ʾ in Ennemor and Endegeň 9). Thus *ṭäffa-m* (M.) "applaud", *ṭifäṭäfä* (S.), *ṭäfäṭṭäfä* (Amh.), but *ʾäffa* (Ed.); *mäṭärä-* (C.Gt.) "castrate", *maṭṭärä-m* (M.), but *mạ̈ ʾärä* (En.); *ṭərəň* (Gur.) "civet-cat", but *ʾänä ʾən* (Ed.); *mäṭṭa* (Amh.) "come", *mäṭä* (W.), but *ma ʾa* (En.Ed.); *ṭəfər* (Gur.) "claw", but *ʾəmfər* (En.), *ə̃fər* (Ed.); *wäṭa* (Gur.) "climb", but *wä ʾa* (Ed.); *äṭṭämä-m* (E.) "coax", *eṭämä-m* (C.), but *e ʾemä* (En.).

4.1.3. The glottalized *č̣* occasionally alternates with ʾ in Ennemor and Endegeň 10). Thus, *č̣ən* (C.E.) "woman in childbed", *č̣əň* (Gt.M.Ms.), but *ʾuň* (En.Ed.); *č̣əza* (C.E.Gt.M.Ms.) "medicament", but *ʾuzä* (Ed.), *wuza* (En.); *fäč̣(č̣)ä* (Gur.) "grind", but *fe ʾä* (En.Ed.); *əmfač̣a* (C.E.En.) "nasal mucus", *nəffač̣e* (W.), but *ʾəmfe ʾa* (Ed.); *č̣eč̣ä* (Gt.) "spread grass or hide", *č̣əyäč̣ä-m* (C.), but *ʾeʾa* (Ed.).

4.2. Alternance between the emphatics and the non-emphatics.

4.2.1. The emphatic *q* can alternate with the non-emphatic *k* 11). Examples: *qänä* (En.) "clever", but *känä* (C.); *qänä* (Go.A.) "day", *qä̃rä* (En.), but *känä* (M.Ms.), *kärä* (C.E.Gt.); *wanq'ä* (Gt.Go.) "monkey", but *wänk'ä* (C.E.M.); *qränṭa* (E.) "carry on the arm", *qänäṭṭa* (Ed.), *qənätta* (A.), but *krätta-m* (E.), *kənätta-* (M.Ms.); *qurä* (M.Go.A.) "crow", but *kurä* (E.En.Ms.), *kʷurä* (C.).

4.2.2. The emphatic *ṭ* can alternate with the non-emphatic *t* 12). Examples: *ṭäffa-m* (M.) "applaud", *ṭifäṭäfä* (S.W.), *ṭäfäṭṭäfä* (Amh.), but *täfa-m* (C.), *täffa-m* (E.), *täfa* (Gt.); *šəfṭa* (E.En.Gt.) "brigand", but *šəfta* (Ed.M.Ms. Amh.); *särräṭä-m* (M.) "cauterize", but *säntä* (C.E.En.Gt.); *wäṭṭärä* (Amh.Ed.A.) "distend", but *wätärä-m* (C.), *wättärä-m* (E.M.Go.), *wettärä* (Ms.); *ṭamä* (Amh.) "have flavor", but *tamä-* (C.E.Gt.M.Ms.).

5. *Liquids*

5.1. Alternance of liquids.

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9) See note 8.

10) See note 8.

11) See *Language* 28 (1952) 67.

12) See note 11.

5.1.1. The liquids *l*, *n*, *r* are treated in the same way in nearly all the Western Gurage languages.

5.1.2. The liquid *l* is very rare in Western Gurage. Chaha will be taken as an example. Any original **n*, **r*, **l* at the beginning of the word appears as *n*: *nəb* "bee", Amh. *nəb*; *näč̣ä* "white", Amh. *näč̣*; *nak̲ä-m* "send", Amh. *lakä*; *näma-m* "germinate", Amh. *lämma*; *naqä-m* "be far", Amh. *raqä*; *noṭä-m* "run", Amh. *roṭä*.

5.1.3. Any **r*, **n*, **l* appears as *r* 1) in intervocalic position, 2) between a consonant and a vowel, 3) or in final position after a vowel. Examples: 1) *äram* "cow", Amh. *lam*; *urätänä* "truthful", Amh. *unätäňňa*; *äroṭä-m* "run", Amh. *roṭä*; *däpärä* "add", root *dbl*; 2) *aträgäṭä-m* "cause to kick", root *rqṭ*; *arga* "bed", Amh. *alga*; *ərs* "small", root *ʾns*; *buqʷrä* "mule", Amh. *bäqlo*; *täfräqäqä-m* "be proud"; 3) *əmər* "stone", from *əmən*, *əbən*; *äsər* "root", Amh. *sər*; *qar* "something", Amh. *qal* "word, thing".

The liquid between a vowel and the dental *ṭ* seems to be *n*: *yənṭär* "may it be melted", root *nṭr*.

5.1.4. A geminated **rr*, **nn*, **ll* becomes *n*: *bäna-m* "eat", Amh. *bälla*; *anäbä-m* "to milk", Amh. *alläbä*; *anäsä* "be less", Amh. *annäsä*; *čänä-m* "come", Eža *čännä-m*; *anäṭä-m* "slaughter", Muher *arräṭä*; *fänädä-m* "judge", Amh. *färrädä*.

5.1.5. Endegeň shows a different treatment for the liquids. A few examples show a final *n* where the other languages have *r*: *ä̃wan* "donkey" (see § 20), *ä̃wən* "stone" (§ 25), *ʾə̃wan* "louse" (§ 19). A medial *n* stands for a non-geminated *r* in Ed. *hənəw* "year" for *kərəm* (§ 41).

In general the treatment of the liquids in Gurage requires supplementary information.

5.2. Loss of liquids.

5.2.1. The liquids *r*, *n*, *l* can occasionally be lost. Thus *n*, in *kunčəf* (Gur.) "beard and whiskers", but *kučəf* (Ed.); *känfär* (Gur.) "lip", but *käfär* (Ed.); *qʷänč̣ä* (C.En.Ed.Gt.) "frog", *qʷåläč̣ä* (M.), *qoläč̣ä* (Go.A.), but *qʷäč̣a* (E.), *qʷåč̣ä* (Ms.).

5.2.2. The liquid *l* disappeared in *beṭ* (C.E.En.) "cunning", but *bälṭ* (M.), *bəlṭ* (Ed.Ms.Go.A.S.W.).

5.2.3. The liquid *r* disappears before a dental or sibilant in *däs* (En.Ed.) "dance", but *därəs* (M.Ms.A.), *därs* (S.); *fuṭ* and *furṭ* (Ed.) "blind", but *furṭ* (Gur.); *azgat* (Ed.Gt.) "belt", but *azgart* (C.En.), *azgard* (E.); *bäzaz* (Ed.) "dream", but *bärzaz* (Gur.).

5.3. Insertion of *n*. The dental *n* is inserted in several roots 13). Thus, *äǧ* (C.E.En.Ed.Gt.M.Ms.Go.) "hand", but *ənǧ* (S.W.), *ənǧi* (Z.); *əzən* (S.W.Z.) "ear", but *ənzən* (M.Ms.Go.A.), *ənzər* (C.E.En.Gt.); *ažžä-* (E.M.Ms.Go.A.) "see", but *anže* (S.W.); *aššä* (Amh.) "rub", but *anše* (W.), *anši* (Z.), *onše* (S.); *kedä* (G.) "stamp", *hedä* (Amh. "go"), but *hendä-* (C.En.), *k̲endä* (Gt.); *aq* (M.W.) "sure", *haq* (S.), but *anq* (C.En.Ed.); *matäb* (Amh. En.) "thread of neck", but *mantäb* (C.).

6. *Laryngeals*

6.1. In most of the South Ethiopic languages the laryngeals and the velar *x* become *zero* and are merely vowel carriers 14). Thus, for instance, Amh. *assärä* "tie", root *ʾsr*; *azzänä* "be sad", root *ḥzn*; *arrägä* "ascend", root *ʿrg*; *addärä* "spend the night", root *xdr*. In medial and final positions the laryngeals and the velar *x* become *zero* and, as a result of it, the original triliterals become biliterals in South Ethiopic. Thus, Amh. *rädda* "help", root *rdʾ*; *bärra* "be bright", root *brh*; *fälla* "boil", root *flḥ*; *bäzza* "be numerous", root *bzx*. In Chaha: *säma-m* "hear", root *smʿ*; *ṭafä-m* "write", root *ṣḥf*; *nak̲ä-m* "send", root *l ʾk*; *naqä-m* "surpass", root *lhq*.

7. *Palatalization*

7.1. In the verbal forms of South Ethiopic, the dentals and sibilants followed by the vowels *-i*, *-e* are palatalized; thus, *d*, *t*, *ṭ*, *s*, *z*, *n*, and *l* become *ǧ*, *č*, *č̣*, *š*, *ž*, *ň*, and *y* 15). Examples for the Amharic active participle **läqami* with the last radical dental or sibilant: *wäläǧ* "he who engenders", from **wäladi*, root *wld*; *käfač* "he who opens", root *kft*; *gäläč̣* "he who discovers", root *glṭ*; *wäraš* "he who inherits", root *wrs*; *gäraž* "he who cuts", root *grz*; *addaň* "hunter", from *addänä*; *käfay* "he who pays", root *kfl*.

7.2. Likewise in the verbs with an original last radical *y*, the dentals, sibilants and velars preceding the *y* are palatalized. Thus, C. *bäk'ä-m* "cry", root *bky*; *mäšä-m* "become evening", root *msy*; *näč̣ä-m* "pluck out", root *nṣy*, *nṭy*; S. *säče* "drink", root *sty*.

7.3. Occasionally *r* is palatalized so that *-räyä* becomes *-yä*. The

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13) For Amharic examples, see Praetorius, *Amharische Sprache*, p. 98ff.

14) For more details, see *JAOS* 71 (1951) 213–15.

15) See also E. Ullendorff, *The Semitic Languages of Ethiopia. A Comparative Phonology*, p. 129ff.

examples are taken from Gafat 16). Thus, *qäyä* "abandon", Tna. *qäräyä*; *fäyä* "fear", from **färäyä*, going back to *frh*.

7.4. The prepalatal *ň* occasionally represents an original *y*. Examples: *ləňňə* (M.) "different", *ləyyu* (M.A.), *ləyu* (S.); *gəňi* (Z.) "dog", *gəyä* (Gur.); *täkraňä* (En.Gt.) "hire", *täkraňňä-m* (M.Go.), *täkraňi* (Z.), *täkrayyä* (Ed.Go.), *täkrayyä-m* (A.), *täkraye* (S.W.); *af^{w}åňä* (En.Gt.) "take a rest", *af^{w}åňňä-m* (M.), *afoye* (S.W.), *afuyi* (Z.); *ənbərbaňä* (E.) "butterfly", *əmbərbäya* (C.).

8. *Voicing and Devoicing*

8.1. In Ennemor a final *t* is often voiced into *d*: 17) *anäbät* (C.) "tongue", *anäbäd* (En.); *bunyät* (C.) "pigeon", *bunyäd* (En.); *bərät* (C.) "iron", *bəräd* (En.); *eat* (C.) "sun", *a^{y}äd* (En.).

8.2. Devoicing of final consonants. A final voiced can occasionally become voiceless. Thus, *at* (Western Gurage) "one", *ad* (S.W.), from *and* (Amh.); *nəqəs* (C.E.En.) "moth", but *nəqəz* (A.S.W.), *näqäz* (Amh.Z.); *gus* (En.Ed.) "old", from **guz*, *gurz* (C.E.Gt.M.Ms.).

9. *Contraction of Syllables*

9.1. In Muher and Gogot the syllable *-älä-* in the triliteral verb becomes *-eä*. Thus *däbbeä-m* (M.Go.) "add", from **däbbälä*; *mässeä-m* "be like", from *mässälä*; *qäṭṭeä-m* "follow", from *qäṭṭälä*. In Gogot *-alä* becomes *-ea*; thus, *tä-sea-m* "ask", from **täsalä-m*; *k̲ea-m* "know", from **k̲alä-*.

9.2. The syllable *-əl* can be contracted into *-i* in Muher. Thus, *bäqəl* (Gur.) "hundred", but *bäqi* (M.); *bəqəl* (Gur.) "germinated grain", but *bəqi* (M.); *məgəl*, *məgər* (Gur.) "pus", but *məgi* (M.).

9.3. The syllable *-äl*, *-al* can be contracted into *e* in Muher. Thus *käsäl*, *käsär* (Gur.) "charcoal", but *käse* (M.); *ṭəlal* (A.) "shade", *ṭərar* (C.E.Ed.Gt.), but *ṭəle* (M.); *qal*, *qar* (Gur.) "word, something", but *aš-qe* (M.) "something".

9.4. The syllable *-äyä-*, *-äyi-* can be contracted into *-e*, *-i* or the other way around, that is, *-e*, *-i* can become *-äyä*, *-äyi*. Thus, *ägi* (C.E.) "all right", *äge* (M.), but *ägäya* (En.), *ägiya* (Gt.); *fem* (C.M.) "ashes", *fim* (S.), but *fä^{y}äm* (Ed.), *fəyəm* (S.); *weg* (En.) "dance", but *wəyäg* (E.), *wäyäg* (Gt.); *umb^{w}e* (Ms.) "flood", but *umb^{w}äya* (En. Gt.), *umb^{w}äyä* (Ed.).

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16) See W. Leslau, *Etude descriptive et comparative du gafat*, p. 19.

17) See *Word* 5 (1949) 274–5.

10. *Prothetic ä*

10.1. Prothetic *ä* appears before *r*, and occasionally before *š*. Thus, *äräq*^{w}*e* (C.) "far", from the root *rq*, *rḥq*; *äroṭä-m* (C.) "run", root *rwṭ*, *rwṣ*; *ərkab* (C.) "stirrup", *ärkab* (M.), from Ar. *rikāb*; *äreba* (M.) "waist, hip" 18), but *naba* (C.E.En.Gt.), *laba* (M.G.A.); *ärob* (M.Ms.Go.A.) "Wednesday", but *rob* (Amh.); *ärädda-m* (M.Go.) "help", but *rädda* (Ms.Amh.).

10.2. Before *š*: *əšoh* and *šoh* (Amh.) "thorn".

II. Investigation of the roots

11. "Boy", En.Ed. *äč*, root *wld*.

ač < *ärč* < *är(ə)ǧ* < **rəǧ* < *ləǧ* < *wld*.

The form *äč* is in connection with *ärč* showing the loss of *r* (§ 5.2.1).

For *ärč*, cp. C.Go. *ärč*. In this form the final -*č* represents the unvoicing of the palatal -*ǧ* of *ärəǧ* (§ 8.2).

For *ärəǧ*, cp. E.Ms. *ärəǧ* the initial *ä* of which is a prothetic vowel (§ 10.1). The form comes from **rəǧ* with *r* representing *l* of *ləǧ* in intervocalic position (§ 5.1.3).

For *ləǧ*, cp. S.W.Amh. *ləǧ*, coming from **lədi*, **wəludi*, with loss of the initial *w* and the palatalization of the final *d* into *ǧ* (§ 9.1).

For *wld*, cp. G. *wåld*, Tna. *wəlud* "child", Te. *wəlad* "children"; Semitic: Arabic *wald*.

Variant forms 19). The initial *l* is prepalatalized in M. *yəǧ*. The initial *l* is lost in Go. *əǧ*. In the vocative, C. and En. have the form *ärä* "oh boy!" the final *ä* of which probably comes by analogy with the final *ä* of *gärä* "oh girl!" coming *gäräd* "girl".

12. "Close", En.Ed. *e ʾä*, root *ʿṣw*.

e ʾä < *ač̣ä* < *aṭäyä*, *aṭäwä* < *ʿṣw*.

The form *e ʾä* in connection with **eč̣ä*, *ač̣ä*, shows the glottal stop ʾ representing *č̣* (§ 4.1.3).

For *ač̣ä*, cp. Gt. *ač̣ä*, C. *ač̣ä-m*, Ms. *ač̣č̣ä*, E.M.Go.A. *ač̣č̣ä-m*, Gaf. *ač̣č̣ä*. The final *č̣* is a palatalized form of *ṭ* of *aṭäwä*, *aṭäyä* (§ 7.2).

The root **aṭäyä* is preserved in S.W. *onṭe*, with augmented *n* (§ 5.3).

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18) For *r* between vowels see § 5.1.3.

19) In the "variant forms" are included forms that are not in direct line of derivation.

The origin of *aṭäwä, aṭäyä* is *ʿṣw*, with ʿ becoming zero (§ 6.1) and *ṣ* of Proto-Ethiopic represented as *ṭ* in South Ethiopic (§ 2.2).

For *ʿṣw*, see G. *ʿaṣäwä*; in Tigre the form is *ḥaṣäwä* with *ḥ*.

13. "Tree", En. *e ʾä*, root *ʿḍ*.

e ʾä < **eč̣ä, äč̣ä* < *äṭä* < *ʿḍ*.

The form *e ʾä* is in connection with **eč̣ä, äč̣ä*, with ʾ representing the glottalized *č̣* (§ 4.1.3).

For *äč̣ä*, cp. C.Gt. *äč̣ä*, E.M.Ms.Go. *äč̣č̣ä*, Te. *ʿəč̣č̣-ät*. In these forms *č̣* represents a palatalized *ṭ* (§ 7.1).

The form with *ṭ* occurs in Z. *ənṭet*, with inserted *n* (§ 5.3) and final *-t*. The glottalized *ṭ* of Gurage can represent *ḍ* of Geez (§ 2) and the original root is *ʿḍ*, the ʿ of which became *zero* in Gurage (§ 6.1).

For *ʿḍ*, cp. G. *ʿəḍ*, Hebrew *ʿeṣ*.

Variants. An inserted *n* (§ 5.3) occurs in S. *inč̣e*, W. *ənč̣e*, Amh. *ənč̣ät*, Tna. *ʿənṣäyti* (with *ṣ* representing *ḍ*, § 2.2); for Z. *ənṭet*, see above.

A prefixed *y* occurs in Ed. *yä ʾä* coming closely to the En. form. *e ʾä*.

14. "Crunch", En. *e ʾä*, root *ḥqy*.

e ʾä < **eqä, *aqä, aq'ä* < **ḥaqäyä* < *ḥaqäwä*.

The form *e ʾä* is in connection with **eqä, *aqä*, with ʾ representing the glottalized *q* (§ 4.1.1).

For **aqä, aq'ä*, cp. C. *aq'ä-m*, E.M. *aqq'ä-m*, Gt. *aq'ä* (with a palatalized *q'*) coming from **ḥaqäwä* > *ḥaqäyä*. The laryngeal *ḥ* of the original root became *zero* (§ 6.1) and the final *y* of *ḥqy* (coming from *ḥqw*) caused the palatalization of *q* into *q'* (§ 7.2).

For *ḥqy*, cp. G. *ḥaqäyä*, Tna. *ḥaq̄äyä*.

Variants. Aymellel has *ač̣č̣ä-m*, with *č̣* representing the palatalization of *q* (§ 7.2).

15. "After", En. *ĩ ʾĩ*, root *ḥq*.

ĩ ʾĩ < **iqi* < *ḥq*.

The En. form *ĩ ʾĩ* "after" (with nasalized *ĩ*) represents *ḥq* with the initial *ḥ* becoming *zero* (§ 6.1) and *q* represented as glottal stop ʾ (§ 4.1.1) [20].

For *ḥq*, cp. G. *ḥaq*^{w} "hip".

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[20] Fore more details, see *Journal of Near Eastern Studies*, 15 (1956) 241–42.

Variants. C.E.Gt.M.Ms. and Go. have *anq'ä* "after", with inserted *n* (§ 5.3). The final *q* is palatalized into *č̣* in Z. *anč̣i*.

16. "Furuncle", Ed. *äwäʾ*, root *ḥbṭ* "swell".

äwäʾ < äbäʾ < äbäṭ < ḥbṭ.

The Ed. form *äwäʾ* in connection with *äbäʾ* shows a weakening of *b* into *w* (§ 1.2).

For *äbäʾ*, cp. En. *äbäʾ* coming from *äbäṭ*, with *ṭ* represented as *ʾ* (§ 4.1.2).

For *äbäṭ*, cp. C.E.Gt.M.Ms. *äbäṭ*, Amh. *əbäṭ*, for *ḥbṭ* with *ḥ* becoming *zero* (§ 6.1).

For *ḥbṭ*, cp. G.Tna. *ḥabäṭä*, Te. *ḥabṭa*.

17. "Bone", Ed. ***a ʾũwä***, root *ʿṣm*.

a ʾũwä *< **a ʾəm** < aṭəm < *aṣəm < ʿṣm.*

The form ***a ʾũwä*** (with nasalized *ũ*) is in connection with ***a ʾəm***, with *m* weakened into *w* (§ 1.2).

For ***a ʾəm***, cp. En. ***a ʾəm***, with the glottal stop *ʾ* representing *ṭ* of *aṭəm* (§ 4.1.2).

The form *aṭəm* occurs in all the other Gurage languages and is derived from **aṣəm*, *ʿṣm*, with *ʿ* becoming *zero* (§ 6.1) and Proto-Ethiopic *ṣ* represented by *ṭ* in Gurage (§ 2.2).

For *ʿṣm*, cp. G.Te. *ʿaṣəm*, Tna. *ʿaṣmi*, Hebrew *ʿeṣem*.

Variants. Amharic has the form *aṭənt* for **aṭəmt*, with *mt* becoming *nt*. Endegeň has also the form *ha ʾũwä*, with initial *h*.

18. "Wash", Ed. *a ʾä̃wä*, root *ḫḍb*.

*a ʾä̃wä < a ʾäbä < aṭäbä < *aṣäbä < ḫḍb.*

The form *a ʾä̃wä* goes back to *a ʾäbä* with *b* weakened into *w* (§ 1.3).

For *a ʾäbä*, cp. En. *a ʾäbä*; it goes back to *aṭäbä* with *ṭ* represented by *ʾ* (§ 4.1.2).

For *aṭäbä*, cp. C. *äṭäbä-m*, M.G. *aṭṭäbä-m*, S. *aṭäbä*, Ms. Amh. *aṭṭäbä*, E.A. *t-aṭṭäbä-m*. The Gurage *ṭ* represents a North Ethiopic *ḍ*, *ṣ* (§ 2) and the root of **aṣäbä* goes back to *ḫṣb*, *ḫḍb* with *ḫ* becoming *zero* (§ 6.1).

For *ḫḍb*, *ḫṣb*, cp. G. *ḫaḍäbä*, Te. *ḥaṣba*, Tna. *ḥasäbä*.

19. "Louse", Ed. *ʾə̃wan*, root *qml*.

ʾə̃wan < *ə̃man* < *ʾəmar* < *qəmar* < *qəmal*.

The form *ʾə̃wan* (with nasalized *ə̃*) is in connection with *ʾə̃man*, with *m* weakened into *w* (§ 1.2).

The form *ʾəman* is another variant in Endegeñ. It is in connection with *ʾəmar*, with *r* to be identified with *n* (§ 5.1.3).

For *ʾəmar*, cp. En. *ʾəmar*, coming from *qəmar*, with *q* represented as glottal stop ʾ (§ 4.1.1).

For *qəmar*, cp. C.E.Gt. *qəmar*, from *qəmal*, with *r* representing an original *l* (§ 5.1.3).

For *qəmal*, cp. Amh.Ms.Go.A. *qəmal*, S.W. *qŭmal*, G. *qʷəmal*, Tna. *qumal*, Te. *qəmäl*.

Variants. Muher has *qəme*, from **qəmay* < **qəmali*; Zway has *qumay*; Har. has *qumāy*.

20. "Donkey", Ed. *ä̃wan*, root *ḥmr*.

ä̃wan < **ä̃man* < *ämar*, *əmar*, *umar* < *ḥimār*.

The form *ä̃wan* (with nasalized *ä̃*) in connection with **ä̃man*, *ämar* shows the phoneme *w* weakened from *m* (§ 1.2) and *n* representing *r* (§ 5.1.5).

For *ämar*, cp. A. *ämar*, C.E.M.Ms.Go. *əmar*, En.Gt. *ə̃mar*, S.W.Z. *umar*. These forms are loanwords from Arabic *ḥimār*, with *ḥ* becoming *zero* (§ 6.1).

21. "Pipe", En. *ä̃wänd*, Gurage root *qʷämät*.

ä̃wänd < **ä̃wänt* < **äwät* < ** ʾäwät* < **qäwät* < *qʷämät*, *qämʷät*.

The only two stages that actually occur in Gurage are those of En. *ä̃wänd* and of C.E.M.Ms. *qʷämät* and Gt. *qämʷät*. The En. root *ä̃wänd* in connection with *qʷämät* or *qämʷät* represents a final voiced *d* instead of *t* (§ 8.1), and an inserted *n* (§ 5.3) so that the theoretic form would be **äwät*. Furthermore the initial *zero* is for ʾ (§ 6.1) representing *q* (§ 4.1.1), and finally *w* represents a weakened *m* (§ 1.2) so that we obtain the form **qämät*, *qʷämät*, *qämʷät* [21]).

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[21]) It is the same root that means "bowl, gourd" and originates from Cushitic: Kambatta *qōmú*, Gudella *qōma*.

22. "Cow", Ed. *änaw*, root *lhm*.

änaw < *änam*, *äram* < **ram* < *lam* < *lahm*.

The form *änaw* represents **änam*, *äram*, with *m* weakened into *w* (§ 1.2) and the alternance *n:r* (§ 5.1.5).

For **änam*, cp. M.Go. *ənnam*; for *äram*, cp. C.E.En.Gt.Ms. *äram*. These forms are connected with **ram*. The phonemes *n*, *r* are representatives of *l* in certain conditions (§ 5.1.3) so that the above mentioned forms go back to *lam*, the initial *ä* of *äram* being a prothetic vowel (§ 10.1).

For *lam*, cp. Amh.S.W.Z. *lam*, from *lahm* with *h* becoming *zero* (§ 6.1).

For *lahm*, cp. G. *lahm*.

Variants. In Aymellel the form *älam* occurs with a prothetic *ä* before *l*.

23. "Be far", Ed. *na ʾä*, root *rḥq*.

na ʾä < *naqä* < *raqä* < *rḥq*.

The form *na ʾä* "be far" (Ed.), *nu ʾi* "far" (En.) is in connection with *naqä*, with *q* represented as glottal stop ʾ (§ 4.1.1).

For *naqä*, cp. Gt. *naqä-m*, the *n* of which is an alternant phoneme of *r* of *raqä* (§ 5.1.2).

For *raqä*, cp. E. *raqä-m*, S.W.Z.Amh. *raqä*, coming from *rḥq*, with medial *ḥ* becoming *zero* (§ 6.1).

For *rḥq*, cp. G. *rəḥqä*, Tna. *räḥaqä*; Semitic: Hebrew *råḥaq*.

Variants. A prothetic *ä* occurs in M.A. *äraqä-m* (§ 10.1); a prothetic *a* in C. *aräqä-m*, En. *ara ʾa*. Gogot has the form *ra a-m*, with ʾ for *q* (§ 4.1.1).

24. "Big", En. *nuʾ*, root *lhq*.

nuʾ < *nuq*, *nəq* < *ləq* < *ləhəq*.

The form *nuʾ* is in connection with *nuq*, *nəq*, with *q* becoming ʾ (§ 4.1.1).

For *nəq*, cp. C.Ms. *nəq*, coming from *ləq*, with initial *l* becoming *n* (§ 5.1.2).

For *ləq*, cp. M. *ləq*, also Amh.G.Tna. *liq* "chief", coming from *lhq*, with loss of *h*.

For *lhq*, cp. G. *ləhqä*.

Variants. Gogot has *ləʾ* for *ləq* (§ 4.1.1). The same root *lhq* has in the

Gurage verb the liquid *r* representing *l* (§ 5.1.3): C. *tä-raqä-m*, Ed. *tä-ra ʾa*, and so on.

25. “Stone”, S.W. *un*, Har. *ūn*, root *ʾbn*.

*un, ūn < uwun < umun < *əbən < ʾbn.*

The forms *un* (S.W.), *ūn* (H.) are in connection with *uwun* in which *-uwu* is contracted into *u, ū*.

For **uwun*, cp. Ed. *ä̃wən*; this form goes back to *umun*, with the alternance *m:w* (§ 1.2).

For *umun*, cp. Z. *umun*, Ms.M. *əmən*. These forms are derived from **əbən, ʾəbən*, with *ʾ* becoming *zero* (§ 6.1) and the alternance *b:m* (§ 1.1).

For *ʾbn*, cp. G.Te. *ʾəbən*, Tna. *ʾəbni*; Semitic: Hebrew *ʾəḇen*.

A final *r* occurs in C.E. *əmər*, Gt. *ə̃mər*, with alternance *r:n* (§ 5.1.3). The original final *n* is palatalized in A. *əmmayyä*, and in M. *əmmaňňä*.

26. “Barley”, Go. *ahi*, root *ʾkl*.

*ahi < *aḵi, äḵi < ähər, äḵər, əhəl, äḵəl, əkəl < ʾəkəl.*

The form *ahi* goes back to **aḵi, äḵi* with *ḵ* becoming weakened into *h* (§ 3.1).

For *äḵi*, cp. M. *äḵi*, of which the final *-i* represents a contraction of *-ər, -əl* becoming **-əy, -i* (§ 9.2). The Muher noun is in connection with forms such as *ähər* (Ed.Ms.), *äḵər* (C.E.En.Gt.), *əhəl* (Amh. W.Z.), *äḵəl* (S.), with the alternance *k:ḵ:h* (§ 3.1), and *-ər:-əl* (§ 5.1.3). All these nouns are derived from the root *ʾkl*.

For *ʾkl*, cp. G.Te. *ʾəkəl* “food”, Tna. *ʾəḵli*; Semitic: Hebrew *ʾaḵal* “eat”, Ar. *ʾakala*.

27. “Know”, M. *ḵeä-m*, root *khl*.

*ḵeä < *keä, kea < ḵarä, *karä < *kalä < khl.*

The form *ḵeä-m* in connection with **keä, kea* represents the spirantization of *k* (§ 3.1).

For *kea*, cp. Go. *kea-m*, from *ḵarä, *karä, *kalä*, with *-älä, -alä* becoming *-eä, -ea* (§ 9.1).

For *ḵarä*, cp. C.E. *ḵarä-m*, En.Gt.Ms. *ḵarä*, from **karä* (§ 3.1), **kalä*, with *r* representing *l* (§ 5.1.3). All these forms go back to the root *khl*, with *h* becoming *zero* (§ 6.1).

For *khl*, cp. G. *kəhlä* "be able, can", Te. *kähala*; Semitic: Aramaic *kehal*, Soqoṭri *kol* 22).

Variants. Amharic has *čalä* "be able", S.W.Z. *čalä* "know", with *k* of *khl* prepalatalized into *č*, perhaps from some form of the imperfect, such as *yəkəhəl*, in which *k* in the neighborhood of a front vowel results in *č*. The sound *k* is palatalized into *š* in A. *šalä* "know", and is weakened into *h* (§ 3.1) in the Ed.Ms. *harä*, with *r* representing *l* (§ 5.1.3).

28. "Expect, guard, wait", En.Ed. *ʾəyǟ*, root *qrḥ*.

ʾəyǟ < *ʾəyä ʾä* < *qəy(y)ä* < *qərä* < *qrḥ*.

The form of En.Ed. *ʾəyǟ* (also *ʾəyä ʾä*) represents *qəyä*, *qiyä*, with *q* becoming glottal stop (§ 4.1.1).

For *qəyä*, cp. C. *qiyä-m*, *qəyä-m*, Gt.Ms. *qəyä*, *qiyä*, E. *qəyyä-m*. These forms are connected with *qərä*, with *r* becoming occasionally palatalized (§ 7.3 and § 29) 23).

For *qərä*, cp. Go. *qərä-m*, S.W. *qerä*, M. *q'irä-m*. The original root is *qrḥ*, with *ḥ* becoming *zero* (§ 6.1).

For *qrḥ*, cp. Harari *qēraḥa*.

29. "Buy", En. Ed. *siyǟ*, root *srḥ*.

siyǟ < **siyä ʾä* < *sərä* < *srḥ*.

The form of En. Ed. *siyǟ* (with *ǟ*), Ms. *səyä*, C. *siyä-m*, E. *səyyä-m*, is in connection with *sərä*, with *r* becoming occasionally palatalized (§ 7.3 and § 28) 24).

For *sərä*, cp. M.Go. *sərä(m)* coming from *srḥ*, with *ḥ* becoming *zero* (§ 6.1).

For *srḥ*, cp. Arg. *šerräha* "buy".

30. "Fiber", Ed. *ke ʾä*, Gurage root *qanč̣a*.

ke ʾä < **qe ʾä* < **qeč̣a* < *qanč̣a*.

The forms *ke ʾä*, **qe ʾä*, **qeč̣ä* in connection with the form of general Gurage *qanč̣a* represent *k* for the glottalized *q* (§ 4.3), the glottal stop for *q* (§ 4.1.1) and the loss of *n* (§ 5.2.1), unless the form *qanč̣a* comes from **qač̣a* with an inserted *n* (§ 5.3). Cp. also Amh. *qač̣a*, probably taken from Sidamo: Kambatta, Qabenna, Tembaro *qānč̣a*.

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22) See W. Leslau, *Lexique Soqoṭri*, p. 214.

23) In Chaha itself *r* occasionally reappears. Thus, *qəräbom* "they guarded", *qəräwim* "one guarded".

24) See note 23.

31. "Leaf", En. Ed. *kä ʾär*, root *qṣl*.
kä ʾär < **qä ʾär* < *qṭr* < *qṭl* < *qṣl*.
The form *kä ʾär* is in connection with **q ʾr*, *qṭr* with the velar *k* representing the velar glottalized *q* (§ 4.2.1) and with ʾ representing the glottalized *q* (§ 4.1.1).
For *qṭr*, cp. C.E. *qəṭär*, coming from *qṭl*, with *r* representing *l* (§5.1.3).
For *qṭl*, cp. Amh.Ms.Go.A. *qəṭäl*, S.W. *quṭäl*, from *qṣl*, with North Ethiopic *ṣ* represented as *ṭ* in South Ethiopic (§ 2.2).
For *qṣl*, cp. G. *q*^{w}*əṣl*, Tna. *q*^{w}*äṣli*.
Variants. M. and Z. have *qəṭe* from *qəṭäl*, with *-äl* palatalized into *e* (§ 9.3).

32. "One", Gurage (except S.W.Z.) *at*, root *ʾḥd*.
at < *ad* < **aḥad* < *ʾaḥad*.
The form *at* "one" occurs in Western and Northern Gurage. It is in connection with *ad* representing a devoicing of *d* in final position (§ 8.2).
For *ad*, cp. S.W. *ad*, Z. *had*. It is derived from Proto-Ethiopic and Semitic *ʾḥd*, with the laryngeals ʾ and *ḥ* becoming *zero* (§ 6.1) so that *ʾaḥad* > **aad* > *ad*.
For *ʾḥd*, cp. G. *ʾaḥadu*, Tna. *ḥade* (without initial ʾ), Semitic: Arabic *ʾaḥad*.
Variants. The Amharic *and* shows an inserted *n* before the dental (§ 5.3).

33. "Finger", Ed. *aṭe*, root (ʾ)*ṣbʿ*.
aṭe < *aṭeyä* < *aṭebä*(*t*) < **aṣebät* < *ʾaṣbaʿt*.
The form *aṭe* is derived from **aṭäyä*, *aṭeyä* with contraction of *-äyä-* into *e* (§ 9.4).
For *aṭeyä*, cp. En. *aṭeyä*, from *aṭebä*, with *-bä* > *ḇä* > *wä* > *yä* (§ 1.3).
For *aṭebä*(*t*), cp. Ms.Go. *aṭebät*, En. also *aṭebä*, coming from **aṣebä*(*t*), *ʾaṣbaʿt*, with *ṣ* of North Ethiopic represented as *ṭ* in Southern Ethiopic (§ 2.2), and ʾ and ʿ becoming *zero* (§ 6.1). I make no attempt to explain the difference in the vocalic system.
For *ʾaṣbaʿt*, cp. G. *ʾaṣbaʿt*, Tna. *ʾaṣabəʿ*; Semitic: Hebrew *ʾeṣbaʿ*.
Variants. Chaha has *atebä*, E. *atebät*, with *t* representing *ṭ* (§ 4.2.2). Amharic *ṭat* shows *ṭ* for *ṣ* (§ 2.2), loss of ʾ, ʿ (§ 6.1) and *b* becoming *zero* (§ 1.3).

34. "Two", W.Z. *hoy-t*, root *klʾ*.

hoy-t < *k̠ʸoyt*, *k̠ʷet* < *kʷet*, *kit* < **kəl-ät*, *hulät* < *klʾ*.

The form *hoy-t* (in which *-t* is a suffix) is connected with *k̠ʸoyt*, with *h* for *k̠* (§ 3.1).

For *k̠ʸoyt*, cp. Gt. *k̠ʸoyt*. This form as well as C.E.M.Ms. *k̠ʷet* go back to *kʷet*, *kit*, with *k̠* for *k* (§ 3.1).

The form *kʷet* occurs in Gogot; *kit* occurs in Aymellel. In all these forms, the syllable *-oy*, *-e*, *-i* represents the palatalization of *-lä-* and the form is **kəlät* represented as *hulät* in Amharic.

The form *hulät* stands for **kulät*, **kʷəlät* with *h* for *k* (§ 3.1), and goes back to *klʾ*, with ʾ becoming *zero* (§ 6.1).

For *klʾ*, cp. G. *kəlʾetu*, Semitic: Hebrew *kil ʾayim*.

Variants. Tigrinya has the form *kələttä*, for **kəl ʾəttä*, with the loss of ʾ that does not occur often in Tigrinya 25).

The form *wur ʾet* (En.), and *wurə ʾät* (Ed.) likewise go back to *klʾ*: *wur ʾet* < **ur ʾet* < **hur ʾet* (§ 6.1) < **kur ʾet* (§ 3.1) < *kul ʾet* (§ 5.1.3).

There seems to be no doubt that S. *ošt* goes back to the same root, but it is not easy to trace its development. The sound *š* is probably the prepalatalized *k* of the root *klʾ* > **ky* > *š*.

35. "Headache", En. *fä ʾ-äd*, root *flṣ*.

fä ʾ-äd < **fäṭ-äd* < **fälṭ-ät*, *fəlṭ-ät* < *flṣ*.

The form *fäʾ-äd* (in which *-äd* is the abstract ending instead of *-ät*, § 8.1) has the glottal stop representing *ṭ* of **fäṭ-ät* (§ 4.1.2). The form **fäṭ-ät* goes back to **fälṭ-ät*, *fəlṭ-ät*, with loss of *l* (§ 5.2.2).

As for *fəlṭät*, it occurs in M.Ms.A.Z., its root *flṭ* "split" going back to the North Ethiopic root *flṣ* (§ 2.2): G. *flṣ* "split", Te. *fälläṣä*, Tna. *fəlṣät* "headache".

Variants. C.E.En.Gt. have the form *fərṭät*, with the alternance *r:l* (§ 5.1.3).

36. "Noise", En. *k̠əy-ad*, root *klḥ*.

k̠əy-ad < *k̠əyat* < **k̠əlyat* < *klḥ*.

The form *k̠əyad* represents *k̠əyat* with voicing of final *d* (§ 8.1). The ending *-at* is the formation of the abstract.

For *k̠əyat*, cp. C.M. *k̠əyat*, coming from *klḥ*. The abstract **kəlḥat*

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25) Cp. however *ʾenkällo* for *ʾenkə ʾallo* "while he is".

passing through **kəlat* (with *ḥ* becoming *zero*, § 6.1), **kəlyat* becoming *kəyat*, with palatalization of *l* (§ 7.1).

For *klḥ*, cp. G. *kälḥa*.

The root *klḥ* is represented in C.En. as *a-ḵäna*(*m*), with *ḵ* representing *k* (§ 3.1), and *n* alternating with *l* (§ 5.1.4); cp. also Ms. *at-kalla*, from the same root *klḥ*, with *ḥ* becoming *zero* (§ 6.1).

37. "Short", En. *e ʾir*, Ed. *i’ir*, root *ḫṣr*.

e ʾir, i ʾir < **eč̣ir, ač̣ər* < **aṭər* < **aṣər* < *ḫṣr*.

The form *e ʾir, i ʾir* is in connection with **eč̣ir, ač̣ər, ač̣ir*, with *č̣* represented occasionally by the glottal stop ʾ (§ 4.1.3).

For *ač̣ər*, cp. C.M.Ms.Go.A.Amh. *ač̣ər*. In this form, *č̣* is a palatalized *ṭ* (**aṭir*) which represents the dental glottalized *ṣ* of Proto-Ethiopic (§ 2.2). Indeed, the root is *ḫṣr*, with the initial *ḫ* having become *zero* in Gurage (§ 6.1).

For *ḫṣr*, cp. G. *ḫaṣärä*, Tna. *ḥaṣärä*, (with Tna. *ḥ* representing *ḫ* of Geez).

Variants. S. and W. have *anč̣ər*, with an inserted *n* (§ 5.3).

38. "Milk", Ed. *aňňu*, root *ḥlb*.

aňňu < **ay*(*y*)*u* < *ḥay* < *ayəb, ayəṁ, eb* < **alib* < *ḥalib*.

The form of Ed. *aňňu* goes back to **ay*(*y*)*u*, with *ňň* in connection with *y* (§ 7.4).

The form **ay*(*y*)*u* derives from *ayəb*, with *-yəb* becoming *yu* passing through *-yəḇ, yəw* (§ 1.3).

For *ayəb*, cp. Amh. *ayb* "cheese", S.W.Z. *ayb*, having the variants in En.Gt. *ayəṁ* (the *ṁ* representing a labial with half closed lips), and C.E. *eb* (contracted from *ayb*).

All these forms go back to **alib, ḥalib* with *ḥ* becoming *zero* (§ 6.1) and *-li-* palatalized into *-yə-* (§ 7.1) [26].

For *ḥalib*, cp. G.Te. *ḥalib*, Tna. *ḥaläbä* "to milk"; Semitic: Hebrew *ḥalaḇ*.

Variants. Harari *ḥay* comes from *ḥalib* > **ḥaliw* > *ḥay*, with *-li*(*w*) palatalized into *y* (§ 7.1).

39. "To milk", Ed. *annäwä*, root *ḥlb*.

annäwä < *an*(*n*)*äbä* < *al*(*l*)*äbä* < *ḥlb*.

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[26] For *–li–* becoming *–e*, cp. C.Gt. *gef* "long", but M.Ms. *gällif*.

The form *annäwä* in relation to *annäbä* represents a weakening of *b* into *w* (§ 1.3).

For *an*(*n*)*äbä*, cp. En. *anäbä*, C. *anäbä-m*, E.M. *annäbä-m*, coming from *al*(*l*)*äbä*, with *l* represented as *n* (§ 5.1.4).

For *al*(*l*)*äbä*, cp. Amh. Ms. *alläbä* "to milk", Go.A. *alläbä-m*, S.W.Z. *aläbä*, derived from *ḥlb*, with *ḥ* becoming *zero* (§ 6.1).

For *ḥlb*, cp. G.Tna. *ḥaläbä*, Te. *ḥalba*.

40. "Goat", En. *fäňäʾ*, root *fyq*.

fäňäʾ < *fäňňäq* < *fäyäq* > *fəq*.

The form of En. *fäňäʾ*, Go. *fäňňäʾ*, and Ed. *foňňäʾ*, in connection with *fäňňäq* shows the glottal stop representing *q* (§ 4.1.1).

For *fäňňäq*, cp. M. *fäňňäq* going back to *fäyäq*, with *ň*(*ň*) representing *y* (§ 7.4).

For *fäyäq*, cp. E. *fəyäq*, Gt. *fäyäq*. The syllabic structure *-äyä* is contracted into *e*, *i* (§ 9.4) in C.Gt.Ms. S.W. *fəq*, Z. *fiq*.

This root is to be separated from **fyl* of Amh.A. *fəyyäl*.

41. "Year", Ed. *hənə̃w*, root *krm*.

hənə̃w < **hənəm* < *hərəm* < *ḵərəm* < *krm*.

The form *hənə̃w* is in connection with **hənəm* with *m* weakened into *w* (§ 1.2) and is in relation with *hərəm* with the alternance *r*:*n* (§ 5.1.5).

For *hərəm*, see Ms. *hərəm*, for *ḵərəm*, with *h* coming from the spirant *ḵ* (§ 3.1).

For *ḵərəm*, cp. C.E.En.Gt. *ḵərəm*, from *krm*, with *ḵ* for *k* (§ 3.1). For *krm*, cp. Amh. *kärrämä* "spend the rainy season", A. *kərman* "rainy season", S.W. *kärm*, Z. *hərəm*. For the relation of the meanings "rainy season, winter" and "year", cp. G. *ḫarif* "this year", Hebrew *ḥoref* "winter".

42. "Spider", Ed. *əšed*, root *šärarit*.

əšed < *šed* < *šet*, *əšet* < *šeʸät* < *šäreʸät* < *šärarit*.

The Ed. form *əšed* in connection with *šed* has a prothetic vowel *ə* (§ 10.2).

For *šed*, cp. En. *šed* in connection with *šet* representing a final voiced *d* (§ 8.1).

For *šet*, cp. C.E. *šet*, Ms.S. *əšet* (with prothetic *ə*, § 10.2) derived from the variant form of E. *šiʸät*, Gt. *šeʸät* with contraction of *-iyä-*, *-eyä* into *-e* (§ 9.4).

The forms *šiʸät, šeʸät* are probably in connection with A. *šärayt,* Go. *šäreʸät,* with *-äräyä-* becoming *-äyä-, -iyä-* with palatalization of *r* (§ 7.3).

As for the forms *šärayt, šäreʸät,* they are probably in connection with Amh. *šärarit,* W. *ənšärarit.*

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PROFESSOR BURROW AND THE PREHISTORY OF SANSKRIT *)

It is a matter for satisfaction that in the last decenniad several books on Sanskrit were either re-edited or published for the first time. Beside a new impression of Macdonell's Vedic Grammar for Students (1953), a new book by Renou, Grammaire de la langue védique (1952), another volume of Wackernagel-Debrunner and an entirely revised volume of Thumb's Handbuch we now possess also a new book by the Professor of Sanskrit in the University of Oxford. Strange to say, it is the first systematic account of this language in its relation to the other Indo-European languages written in English, the well-known grammars by Whitney and Macdonell being exclusively descriptive in character. Nay, there was before the publication of this book no work in any language which could be said to fulfill this purpose adequately. Referring for the history of Indo-Aryan inside India, from Sanskrit down to modern times, to the work of Jules Bloch – which however still leaves something to be desired – and for a descriptive account to Renou's Grammaire and some of the above books, Professor Burrow has, in order to meet the greatest need, wisely concentrated on the comparative study of Sanskrit. In so doing he presents the subject-matter in eight chapters, dealing with: a general consideration of the relationship of Sanskrit and the other IE languages; the history of Sanskrit; rather long discussions of phonology and the formation of nouns; the declension of nouns; numerals, pronouns, indeclinables; the verb; and non-Aryan influence on Sanskrit. The author has apparently – at the cost of the uniformity of the Great Languages Series – been given a free hand in writing this book and has amply availed himself of the opportunity to enlarge on those subjects in which he has, for many years, taken a personal interest, especially in the often too much neglected formation of nouns (to which 102 pages of 388 have been devoted), some aspects of phonology and foreign influences. This onesidedness has added

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*) T. Burrow, The Sanskrit language. The Great Languages series, Faber and Faber, London 1955.

not only to the merits but also to the somewhat personal character of the book, which in places is more like a handbook of Indo-European than a history of Sanskrit. Students of syntax, style, semantics and other parts of grammar outside etymology, phonology, and morphology, and those who are interested in the relations between the language and the culture which it served, will on the other hand find almost nothing to their taste. The book neither delineates the development of the Sanskrit language, based on a study of philologically established facts, nor furnishes the reader with a description of the rôle of Sanskrit in the social and religious history of India, and as the instrument of a highly important and interesting literature. The literary, philological and cultural sides of Sanskrit have been seriously neglected. For information concerning the grammatical studies of the Indians themselves or the influence of the grammarians on speech usage etc. it will likewise prove to be an imperfect guide. That is not to say that the present reviewer has not read, and often enjoyed, the book with the greatest interest. Nor is it to blame the author: in these fields so much has been left hitherto undone, that the presentation of a somewhat satisfactory picture would take many years; syntax has problems and methods of its own; and the natural aptitude and inclinations of the student of syntax differ as a rule considerably from those characteristic of the phonologist or morphologist. The only thing seriously to be regretted is that there should be some linguists – thus far, no Sanskritists, thank Heaven – who do not scruple to deny a topic a scientific character if it is not one of their personal favourite occupations.

Proceeding now to discuss this important book in detail, the first chapter dealing with the relations between Sanskrit and Indo-European in general provides the reader with a good, reliable, and modern introduction to this subject (it might be asked if cases like Skt. *nābhi* ~ Gr. ὀμφαλός, words which may have been subject to 'tabu', are the most suitable arguments for showing that no unitary IE can be reached by means of comparison).

In the central chapters of the book – especially in those on phonology, on the formation of nouns, and in some parts of those dealing with flexion – Professor Burrow has ventured upon the arduous task of providing an up-to-date synthesis of those views and theories which appear acceptable. That the classical doctrine which was in the main generally adopted before the discovery of Hittite proved to involve revolutionary consequences, could not be maintained, is self-evident. In writing a reliable introduction adapted to the needs of the student and the general reader the real difficulty to be faced results, on the other hand, from the absence of a generally received body of doctrine replacing the old and the variety of conflicting theories with regard to disputable details. In the circumstances it cannot be expected that two authors would entirely agree as to which standpoint should prevail and which theory should be included in a discussion of so many intricate subjects. Putting this first and foremost this book though inviting criticism on many points of detail, may be said to be a courageous attempt to bring the gist of the new theories into harmony with those elements in the classical doctrine which have remained tenable.

In the main, the author has with regard to some fundamental points taken up an unequivocal and comparatively speaking radical standpoint. The laryngeal theory is consistently adopted and the classical theory of the shwa is completely discarded. In the chapter on the formation of nominal stems the suffixal system is largely described as a unity, any suffix being, in principle, regarded as analyzable into component parts, and the complexity of nominal stem formation in the ancient IE languages being explained as the outcome of the multifarious combination of a comparatively small number of primitive elements. With regard to the author's rejection of the shwa theory (see also his long article 'Shwa in Sanskrit', Transactions of the Philological Society 1949) I must confine myself, for reasons of space, to the remark that he has for the time being failed to convince me. In cases such as Skt. *pitár-*: Gr. πατήρ: Lat. *pater* etc. (see Shwa in Sanskrit, p. 38) the explication substituted for the traditional view: IE *pətér-* ("the possibility arises that Skt. *pitā́* should really be analysed *p-itā́*") is more complicated and leaves many points unexplained. Whereas for instance the 5th, 9th and 7th present classes are, in the author's opinion, to be analyzed **k̂ḷ-n-éw-ti* (*śṛṇóti*), *pḷ-n-éH-ti* (*pṛṇā́ti*), *yu-n-ég-ti* (*yunákti*), he prevents himself, by rejecting the shwa, from drawing the conclusion that the plural forms must have been **k̂ḷ-n-u-més* (*śṛṇumás*), *yu-n-g-més* (*yuñjmáḥ*) and in the 9th class *pḷ-n-H-més* (or *pḷ-n-ə-més*), cf. Greek δάμνᾰμες (p. 325 ff.), that is to say: he must leave the plural forms unexplained. I for one can for the time being see no use in disconnecting the union-vowel in Sanskrit (the *i* dealt with in ch. IV, § 17) from the closely corresponding facts in Greek and other languages, that is, for instance, to say that the verbal adjective *sthitá-* "standing" is not, as a complete word, identical with the Gr. στατός and the Lat. *stătus*. One also fails to see why the view of *mahā* as an *ā* stem given on p. 194 should be preferred to the usual explication. May the identification of the Latin type *capio* and the Skt. type *vámiti* be proposed without referring to what may at least be called the common views about these classes of verbs? (see e.g. p. 320).

A drawback to the plan followed in writing this book is the complete absence of foot-notes and bibliographical references. Few readers will be able to distinguish between what is really new or what are more of less personal views of the author, and what is either generally accepted or a different standpoint defended by one, or a few, other scholars. This disadvantage is not removed by the select bibliography at the end which is not only very incomplete, but also rather haphazard. Those who are not initiated into the intricacies of comparative IE linguistics or who have omitted to read all important publications on Hittite or Slavonic will not always be able critically to follow the author in his often apodeictic statements. A more extended use of "probably", "in the author's opinion" or phrases to the same effect might have given the reader a note of warning against an inevitable subjectiveness in deciding on the stand to take about problematic questions, e.g. p. 226 with regard to the origin of the *n* in *devā́nām*, *agnīnā́m* etc.; p. 294, 2 up: the relations between the future and present stems in *-ya-*; p. 329, 8 up: the origin of a present such as *stányati*; p. 300, § 3 the complete identity of the verbal suffixes with the corresponding suffixes appearing in the formation of nouns; p. 203 with regard to the etymological connection between Skt. *snuṣā́* "daughter-in-law" and Lat. *nūbere*; p. 204: the origin of the *ī* in the Latin singular genitive (type *equī*). Too often disputed points are dispatched with a qualification as 'clear', 'simple' or 'obvious'.

Special attention may, in this review, be drawn to the long fourth chapter, dealing with the formation of nouns (p. 117–218). Basing his arguments mainly on Benveniste's 'Origines de la formation des noms en indo-européen' (Paris 1935) and borrowing also from the often highly disputable conclusions of Specht in his 'Ursprung der indogermanischen Deklination’ (Göttingen 1944/7), the author attempts with great suggestiveness but also with surprising boldness, to develop a whole system of prehistoric word formation which, though probably impressing the inadvertent reader by its simplicity, essentially is, I am afraid, rather a product of artificial simplification and hasty generalization. Taking the line that any suffix which is longer than one sound is a combination of primitive suffixal elements (see p. 121) Burrow does not, for instance, hesitate to consider any case of the Skr. *-ra-* and *-na-* suffixes combinations of a primary *-r-* or *-n-* and an originally adjectival thematic vowel (p. 134 ff.). That it is warranted to explain a limited group of *-ro-* words (e.g. ὕδρος “water-snake”, Skt. *udrá-* “a kind of aquatic animal” etc.: ὕδωρ) in this way was no doubt rightly maintained by Brugmann (Grundriss II, 1, p. 347) and other scholars (cf. e.g. Wackernagel-Debrunner, II, 1, p. 849). Benveniste’s explication of φλεγυρός “burning, inflamed” and of other similar words as *φλεγυρ + -ο- etc. already rested on the supposition that once *φλεγύρ, *γλαφύρ and other such words – inferred from ἄργυρος “silver”: AI. *árjuna-* “shining, white” and the ambiguous Latin *augur* and *fulgur* 1) – actually existed, and in dealing with these words no mention was made of the interesting fact that these Greek -υρο- words constitute a group of adjectives referring to qualities and properties making a considerable impression on the senses: βλοσυρός “hairy, shaggy, bristling”; λιγυρός “shrill”; μινυρός “whining, whimpering”; βδελυρός “disgusting”; ἁλμυρός “salt, briny” 2) so that they may be understood as a product of analogy 3). There can however be no doubt that in adding Skt. *kṣīrá-* “milk” – the etymology of which he rightly qualifies as “uncertain” (p. 135) 4) –; *rándhra-* the only relatives of which are O.Engl. *rendan* “to tear” and O.Frisian *renda*,

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1) See also Walde-Hofmann, Lat. etym. Wtb. I, p. 83; 511, where Benveniste’s hypothesis has not even been mentioned (cf. p. XIV).

2) Liddell and Scott, Greek-English Lexicon, s.v. are no doubt wrong in dividing ἁλμυρ-ός; see Hj. Frisk, Griech. etym. Wtb. p. 78.

3) Benveniste’s interpretation (p. 36) that ἐχυρ-ό-ς “strong” and Vedic *sáhur-i-* “mighty”, “victorious” derive from **seĝhur*, is in itself no more than a possibility beside ἐχυ-ρό-ς, *sahu-ri-* (cf. Ved. *jasu-* “exhaustion”: *jasuri-* “starved”) and ἐχ-υρό-ς, *sáh-uri-*.

4) For *kṣīra-* see M. Mayrhofer, Kurzgefasztes etym. Wtb. des Altind., p. 290 and the present author’s paper on ‘Idg. *ser-*’ in Mnemosyne, III, 6 (1938), p. 155.

rend "rent" etc., to those words which may be regarded as thematic extensions of neuter stems in *r*, Burrow goes too far, the more so as the effects of analogical processes are not often emphasized in his arguments.

As might be understood from p. 148 III all words in *-irá-* run parallel to those in *-urá-* (beside the strong form *-vará-*). But what about the complications and the anaptyctic *candira-*"moon" beside *candra-*? This is not to suggest that these particulars should have found a place in Professor Burrow's book.

Similar marginal notes might be made to the discussion of the suffix *-na-* (IE. **-no-*). In an account of the Sanskrit language it would moreover have been better to say more about the interesting spread of *-na-* as a verbal adjective in this language, about its limitations (*-na-* after roots ending in *d* or in a long vowel), about the rôle which it played in the historical period, e.g. in avoiding homonyms [5]): *vigna-*: *vij-* "to start back" instead of an older *vikta-* which could also derive from *vic-* "to separate"; *bhagna-* "broken" (Lat. *fractus*): *bhakta-* "distributed, loved".

In connection with his view of *ūṣmán-* "heat, vapour", *ojman-* "strength" etc. (transferred from the neuter class, p. 134 ff.) more attention might have been paid to the accentuation in Greek and Sanskrit (τέρμων beside τέρμα "boundary" as against ποιμήν "herdsman" in Greek, but *svā́dman-* n., and *svādmán-* m. "sweetness" in Anc. Indian). Cf. also p. 141, p. 147 f. (II). In contradistinction to the traditional view of the IE. suffix *-u̯ent-* Burrow prefers to analyse this element into three parts: the well-known suffix *-u-*, the element *-e/on-* (cf. AInd. *arvan-* "running; courser") and *-t-* (cf., beside *arvan-*: *arvant-* "id."), interpreting the synchronous Avestan *ərəzu-* "right" *ərəzvan-* "straightly directed" and *ərəzvant-* "straight" as a set of fortunately preserved representatives of three successive phases, "which shows how the compound suffix is built up step by step" (p. 144). One should at least like to hear what reasons led to the addition of *-t* and what was the function of that element. It is of course possible that Burrow is right, just as there is a chance that Benveniste (o.c. p. 168) hit the mark in assuming Gr. πῖαρ to have originally been a word for "mutton fat" – the actual meanings however being "fat of cows, men, olives, juice of trees, richness of the soil etc.", cf. however Od. 9, 464 – a supposition necessary to connect πῑ́ων "fat" and AI. *pī́van-* "swelling, fat" with πῶυ "flock of sheep", which is an -*u*-stem 6)). But may a theory presented, with assertiveness, to a wider public be founded on a chain of mere possibilities in connection with a variety of single words? And is it warranted to suppress, in discussing the suffix -*mant*-, which is limited to Indo-Iranian, any reference to the fact that it is gradually spreading in post-Ṛgvedic sources? It is generally held to have originated in dissimilation, a hypothesis more suitable, all facts considered, to carry conviction than Professor Burrow's analysis -*m*- + -*an*- + -*t*- (p. 145 f.; 172). The belief in the doctrine, that any suffix beginning for instance with an *m* must represent a compounded element originating in one or more additions to a single *m*, seems exaggerated also in other cases, e.g. that of -*min*- (p. 172): see Wackernagel-Debrunner, o.c., p. 776.

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[5]) See my article 'Zur Homonymie im Altindischen', Acta Orientalia 14, esp. p. 188 ff.

This tendency to neglect data pointing to a different origin of words belonging to the same class in favour of a rigid systematization of the prehistoric development has played the learned author more than one trick. Judging by appearances there is one homogeneous class of -*iná*- words (p. 151), but not all of them are ancient: *śākiná*- "strong" seems to derive from *śākín*-, *hariṇá*- "yellowish" may be considered a retrograde derivative (Ved. *hariṇī* fem.); some epic words are, or may be, of Middle Indian origin.

In discussing the participles in -*vas*- the author ventures the opinion that the specialisation of this adjectival suffix in the formation of perfect participles has resulted in its being separated completely from "the corresponding compound neuter suffix -*uṣ*-" (p. 160). The present reviewer would have preferred first to establish the connections between both categories as far as these might appear from historical documents (for *cakṣus*- "eye" as a petrified participle see M. Leumann, Morphologische Neuerungen im altind. Verbalsystem, p. 33, cf. ṚV. 2, 39, 5), and then, if there should have been occasion to do so, extend investigations to the prehistoric period. A similar remark applies to the remark on the suffixes -*yás*- and -*iṣ*- which according to the author, "became totally divorced" because of an early specialisa-

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6) Not adopted by J. Pokorny, Indogerm. etym. Wtb. (1955), p. 793 839.

tion of the former (p. 160), and to the statement that the strong grade of the suffix *-ut-* in *marut-*, "name of the storm gods" – which by the way, occurs only in a few etymologically rather obscure nouns - is employed in the perfect participles: AInd. *vidvat*, Gr. [Ϝ]ειδ-[Ϝ]ότ-ος (p. 165).

Other instances of statements which in the opinion of the reviewer are too positive are: p. 127 where the Latin *sanguis* "blood" and *saniēs* "gore" are regarded as derived from the *n-* stem belonging to the AInd. *ásṛk/asnás* "blood" with loss of the initial vowel through apophony. Although it must be conceded that a more recent insight into the nature of apophony tends to corroborate ancient combinations of this kind it would here also have been more prudent to emphasize their hypothetic character in a book written for "students and intelligent amateurs". The same inclination to explain formations which in historical times existed beside one another as representatives of different stages of a prehistoric development manifests itself throughout this long chapter. Professor Burrow's arguments are often too simple and too self-evident to convince the reader who knows how intricate problems of historical linguistics usually are, and too often also any semantic illustration of what is alleged as fact is omitted: see, e.g., on p. 166, the discussion of *-atá-*. Is it, for instance, warranted to declare *padāti-* "foot soldier", to be an *i-* extension of a *t*-stem (p. 164)?: the word, about which scholars are at variance has often been explained as a compound (see Wackernagel-Debrunner, o.c., p. 270; G. Liebert, Das Nominalsuffix *-ti-* im Altindischen, Lund 1949, p. 182 f.).

Moreover, the theory of a small number of original suffixes developed, by mutual combination, into a complicated system, involves some questionable assumptions. Is it warranted to be so positive with regard to the – of course purely hypothetical – original simple suffixes as to deny the existence of any discernible distinction of meaning or function between them (p. 118)? Is it correct to hold that the suffix *-es-/-os* which appears in Greek ἔτος "year" – cf. Hitt. *wet* "year" – does not add anything to the meaning of the word?, a statement which for the rest is in accordance with the absence of any comment on the function of the suffix *-as-* in the following pages (p. 157 ff.). Yet it seems hardly possible to deny that many ideas denoted by these *-as-* words were what can be called 'power-substances' or 'Daseinsmächte', that is to say: substances, entities, 'ideas' which were considered as bearers of energy, or which made the more or less primitive Indo-Europeans experience the presence of some power residing in them (see the reviewer's Ancient-Indian *ojas* etc., Utrecht 1952, p. 46 ff.). If this 'idea' is common to most words in *-es-/-os* the question arises why the Greek ἔτος is one of them. The answer may, for the time being, be suggested by the fact that the year played an important part in the 'Weltanschauung' of ancient peoples. To the Greeks the virtue, the very being of the year and the seasons was, to quote Miss J. Harrison, Themis, p. 185 in "the flowers and fruits they always carry in their hands". "The year" (G. van der Leeuw, Religion in essence and manifestation, p. 384 says) "brings fruit and is indissolubly linked with the saviour". The year was, according to the authors of the ancient Indian brāhmaṇas, the womb and strength of all beings, identical with such high gods as Agni (Fire), and Prajāpati (the Lord of creation); it represents the All. It may therefore be questioned if we would be right in contending that such differences of meaning as often exist between words derived from the same root but formed with different suffixes are a more or less fortuitous result of a secondary development, a matter of idiom, and have nothing to do with the ultimate nature of the suffixes as such, or with the function or inherent meaning of the suffixes. It is true that most attempts to derive the ancient suffixes from independent words – Pott and others for instance asked themselves if the suffix *-as-* could be identical with *as-* "to be" – are failures or at least open to the gravest doubt. But it is also true that what we call a suffix has developed and spread only as an element of complete words. Suffixes must in the prehistoric period have spread as they do in historical times, that is to say: from word to word. The starting-point of semantic specialization is to be sought in forms which in their entirety have a special value, but which particular word or words were in prehistorical times the first to introduce the suffix with a special value will generally speaking be unknown for ever. But this ignorance should not induce us to say that in the beginning suffixes had no meaning at all. They may have originated by various processes of word formation, but in principle the group of words formed with the same 'suffix' or 'suffixal element' was characterized by a special 'semantic' *nuance*, however insignificant it might have been. The AInd. *dvéṣas* "hatred, hostility, enemy" was by means of its suffix included in a large group of terms for potencies which within some form of experience were supposed to be present in persons, objects and phenomena, and by virtue of which these were influential, powerful, effective. The noun *dviṣ-*, though as far as may be seen synonymous, was not characterized as such. However vague and indeterminable, the 'meaning' of a suffix often may be from the lexical point of view (see e.g. M. Leumann, Gruppierung und Funktionen der Wortbildungssuffixe des Lateins, Museum Helveticum 1, p. 129 ff.) a thorough investigation into its grammatical function may bring to light characteristics which give it its own place in the system of the language: at first sight the Greek -ῑτης may be another device for forming words for persons, animals, plants, stones, diseases etc., but on closer examination it appears to denote such persons, entities or phenomena as are members of a class or community; it classifies and includes in a category (see G. Redard, Les noms grecs en -της, -τις, Paris 1949, esp. p. 227 ff.).

How are we to bring the conception of an originally limited number of meaningless suffixes which spread and expanded by combination into harmony with our knowledge of the processes which took place in living languages during the historical periods? Is there much use in saying for instance that "the numerous neuter thematic stems are only enlargements of simple consonantal stems – e.g. Skt. *añjan-a-m*: Lat. *unguen* or *vana-*: *van-*" if we do not know anything about the origin, meaning, spread, function etc. of the forms at issue? Would it not be better simply to state that beside words such as Lat. *unguen* which on the whole are older, there are words of the *añjan-a-* or *van-a-* type. And what does in this connection "originally" mean? Root nouns may be ancient, but they cannot have been the "absolute beginning". Although "originally" therefore clearly refers to the oldest stage to be reached by our theories and speculations the impression is created that there was at some time a homogeneous 'beginning' of a considerable simplicity which can be discovered by our investigations. I for one am afraid that more could be said in favour of the opinion that the so-called reconstructed Indo-European is, by the very nature of our highly incomplete and heterogeneous sources, rather a patchwork, consisting of "reconstructions" of different value and degree of certainty, of a varying geographical spread and referring to a variety of prehistoric epochs.

So far as the etymologies are concerned on which many of the arguments and conclusions contained in these chapters are based, Prof. Burrow broadly speaking remains on safe ground in adhering closely to more or less generally accepted interpretations. Of course some details may be a matter of opinion. For other etymologies of *úṣṭra-* "camel" (p. 150) see e.g. M. Mayrhofer, Kurzgef. etym. Wtb. d. Altind. p. 113 f.; for the difficult name of the god Mitra (p. 150) Wackernagel-Debrunner, II, 2, p. 701. For the words in *-anta-* etc. (p. 153) the reviewer may refer to Altind. °*anta-*, °*antara-* usw. (Bijdragen tot de Taal-, Land- en Volkenkunde, 97, p. 453 ff., The Hague 1938), in which some of them have been shown to be derivatives from a suffixlike element *-anta-* based on *antar* "within, in the middle or interior" and *anti* "near, in the presence of". Has *vádhri-* "a castrated animal" (opposed to *vṛṣan-*) really something to do with *vadhar-* n. "a destructive weapon (esp. Indra's thunderbolt)"? Etymologizing mythological names is as a rule a hazardous undertaking; yet, **mar-* "to shine" (p. 165) seems indeed to accord better with the description given of the Maruts in the texts than **mar-* "to die", or "to crush". In particular cases the evidence presented by the texts and by comparative methods does not allow of any definite conclusion with regard to the value of a suffix: *ṛhant-* "weak, powerless" which occurs Ṛgveda 10, 28, 9 in connection with the semantic opposite *bṛhat-* may, for instance, be a contemporaneous or an incidental adaptation to *bṛhat-* (Wackernagel-Debrunner, II, 2, p. 165), not an ancient adjective. In mentioning an etymological connection which is not given in any of the recently published etymological dictionaries of the languages concerned (p. 182 *ā́yu-* "length of life" from the I.E. root *ai-* "to apportion, give", i.e. "one's allotted span": cf. Walde-Hofmann I, p. 21; Walde-Pokorny I, p. 6 f.; Pokorny, p. 17; Feist, p. 30; Mayrhofer, p. 77; Frisk, p. 49; Van Windekens, p. 15) it would perhaps have been advisable, to add, by way of warning, a "probably" or "in my opinion".

A few stray observations on points of minor import may be subjoined here:

p. 43 the term *deśī* might have been explained.

p. 47 the observation that classical Sanskrit is regulated to the last detail by the work of the great grammarians should not lead the reader to believe that Pāṇini himself has described every item of the Sanskrit grammar.

p. 70 the origin of Gr. παρθένος is uncertain.

p. 82 ff. In dealing with the treatment of *r* and *l* in Vedic and Classical Sanskrit some words might have been said on such interesting doublets as *jvalati* "to burn brightly, glow" and *jvarati* "to be feverish"; *rabh-* "to take hold of, grasp, clasp" and *labh-* "to take, catch, seize", *ā-rabh-* "to undertake, begin", *ā-labh-* "to handle, touch, reach" etc.; *carati* "to go, move, walk, wander" and *puṃścalī* "running after men" which have undergone a semantic differentiation.

p. 117 The terminological identification of the thematic vowel of suffixes may lead to misunderstandings on the part of the reader. It might in this connection be observed that the traditional notation of suffixes with two hyphens (e.g. *-as-*) has much to recommend it.

p. 139 It seems more probable that the word for "father" AInd. *pitár-* etc. is like *mātár-* based on an ancient (and widespread) "Lallwort" than on a root *pāy-* "to protect".

p. 149 in describing the semantic development of the so-called comparatives in *-tara-* emphasis could have been laid on the idea of complementary or spatial opposition inherent in it, an *aśvatara-* being, in contradistinction to various species of asses, an animal which partakes of the nature of a horse. This is especially clear in cases such as Greek δεξίτερος "right": ἀρίστερος "left", ἡμέτερος: ὑμέτερος, but compare also ἀγρότερος "living in the fields; wild (of animals)"; Lat. *matertera* "aunt on the mother's side".

p. 162 l. 1 *yaśas* means "honour, dignity" rather than "beauty".

p. 166 what about the Latin adverbs in *-tus* and Lat. *intus*, Gr. ἐντός?

p. 172 f. If the author is right in explaining the *m* in the neuters of the type *yugám* as an original *-m-*suffix, which owing to similarity with the singular accusative of thematic stems came, by a process of adaptation, to be treated as a termination, one is inclined to ask why these words have no nominative in *-a-s*.

p. 176 Does the author, in declaring *práti* "against" to be a *-ti-* stem (dividing this word *pr-ati*) reject the usual explication of I.E. *pro-ti* as an 'extension' of *pro-*?

p. 182 In rejecting the usual association of the prefix *ku-* with the interrogative pronoun mention should have been made of *ka-* and *kim-* in the same function.

p. 212 Why prefer the term 'augment' for the *-t-* in *dhanajít-* to 'determinative' or another less ambiguous word?

p. 268 In contradistinction to Weber, Whitney, Schwyzer-Debrunner and other scholars, among whom the author of the book under review, who consider *bhávān* to be an irregular contraction of *bhágavān* "the fortunate, blessed one", Lanman, Bopp, and many others regarded it as originating in the present participle of *bhavati* (see e.g. A. Thumb, Handbuch des Sanskrit, 1905, p. 225; 226, n. 1). As the primary sense of *bhū-* is not "to be, to exist", but "to grow, to thrive, prosper" *bhavant-* "flourishing, thriving" might as a form of address be compared to similar expressions in other languages. Cf. e.g. the Latin form of greeting *salve* "be well"; the Skt. *āyuṣmant* (Pāli *āyasmant*) "having life or vitality", used as a a respectful appellation or honorific title etc. For another opinion on *bhoḥ* see Wackernagel-Debrunner, Altind. Grammatik III, p. 259.

p. 281 10 lines up the statement that some adverbial instrumentals in *-ā* have a locative rather than an instrumental sense, e.g. *dívā* "by day" is questionable: in these cases the instrumental indicates the time passed through, the period by the lapse of which a process is brought about: *ekāhnā* "in the course of one day", implying that the subject of the sentence actually reaches its destination after that lapse of time.

p. 282 For the extremely difficult problems connected with the origin of *kaścana* "anybody" and related forms the attention of the reader may perhaps be drawn to the relative discussions in two papers by the reviewer: Lingua 4, p. 262 ff. and The use of the particle *ca*, to be published in Vāk (Poona, 1956).

p. 295, 2nd pericope In saying that there is no serious distinction of meaning between the type *kárat* and the type *kṛṇávat* the author has for a moment left the 'aspectual' differences out of consideration: compare the reviewer's 'Character of the I.E. moods' (Harrassowitz, Wiesbaden 1956), ch. IV.

p. 297 and 340 ff. The development of the perfect into a narrative past category might have been discussed at greater length. It would in the reviewer's opinion be preferable to hold that the aorist mainly referred to the 'actual past' (cf. p. 295).

p. 299 The original function of the optative was in the reviewer's opinion not the expression of a wish, which on the other hand cannot be proved to have been the source of the potential meaning. For the essentially contingent character of this mood see 'Character of the I.E. moods'.

p. 301, 10 l. up "In Sanskrit the ten present classes are equivalent in function": this is true, but it does not follow that there was never attached any inherent difference of function or meaning – this term to be taken in a large sense – to the various types of stem formation in prehistoric times; for the reduplicating class see e.g. J. Vendryes, M.S.L. 20, p. 117 ff.; F. Specht, K.Z. 62, p. 49; to the *-ya*-class belong many 'intransitives' and verbs denoting emotions, sensations, perceptions.

p. 302, § 4 Some words might have been added to explain the accentual differences in connection with finite verb forms: cf. e.g. A. Meillet, Sur l'accent védique, Bull. Soc. Ling. 34 (1934); L. Renou, Grammaire de la langue védique, p. 74.

p. 313 For Gr. φέρει see the extensive bibliography in E. Schwyzer-A. Debrunner, Griech. Gramm. I, p. 661 and 841.

p. 331, 9 up The periphrastic future refers to processes the realization of which is expected or considered certain.

p. 380 *aguru-* "fragrant aloe wood" – which was indigenous in Sumatra, Banka, Hainan, Malacca, Further India (see Journal asiatique 1865, p. 287; 291; 512; 1918, p. 26) – must, in the reviewer's opinion (see Austrisch en Arisch, Utrecht 1932, p. 16 ff.), be considered a loan from Austrian languages.

p. 384 In considering *bala-* "strength" a Dravidian loan Prof. Burrow is not alone. As however this word was an important standby for those who indicated a *b* for Orig. Indo-European one might ask what is the author's opinion with regard to that sound: on p. 66 the *b* is attributed to the IE consonantal system, but on p. 67 no instances are given.

The book is beautifully produced. Misprints are, however, not rare, some of which may be confusing: p. 54, l. 3 read *kāvya*; p. 82, 4 l. up *l* instead of *e*; p. 84 m. *ešḫar*; p. 85, 13 l. up *g*^{u}*ṛHú-*; p. 86, 12 l. up *sṇHtó-*; p. 127, 7 *aser*; p. 143, 15 l. up *rúśant-*; p. 163, 13 a *ṛṣi*; p. 167, 10 *k̂lutó-*; p. 172, 1 l. up: on which it is based is; p. 177, 12 l. up *pék̂u*; p. 224, 4 l. up *pék̂u*; p. 288, 7 l. up **pṛk̂sk̂ō*; p. 290 al. 2 *śṛṇóti*; p. 293, 4 l. up *dṛṃhati*; p. 303, 1 l. up initial; p. 321 εἰσπιφράναι; p. 379, 3 l. up delete: remains.

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SUBJECT-PREDICATE ANALYSIS

Summary

Several problems discussed by logicians, even nowadays, are not problems of logic, but of linguistic analysis. Discussion of a few common assumptions which are wrong, and resulting errors, on the basis of a definition and analysis of the concepts 'sentence' and 'assertion'.

INTRODUCTION

In the following I shall deal with a fact which is well-known and established both in logic and in linguistics, and a few fundamental problems connected with it. The fact itself, and the present state of the problems, may be briefly described as follows.

The grammatical subject of a sentence does not always express the logical subject, i.e. the subject of the assertion contained in the sentence. This is nowadays a generally acknowledged fact.

The main problems, connected with this fact, are the following. 1. What is the exact difference between a sentence and an assertion? How can we define a sentence, and how can we define an assertion? 2. What is the difference between logical subject and logical predicate? How can we define them? 3. By means of what elements of a sentence does a given language, for instance contemporary English, express the distinction between logical subject and logical predicate?

The fact itself has already been stated by Aristotle when observing that a logical subject need not be in the nominative case. The difference between logical subject and predicate has been defined in various different ways by logicians. With regard to the elements of a sentence by means of which the distinction is made in a given language, it is said nowadays that "The English grammarian has to weigh (a) word-order, (b) stress, (c) intonation, (d) the use of word-forms, and (e) inflection." (A. S. L. Farquharson in his edition of John Cook Wilson's *Statement and Inference* I, Oxf. 1926, 119, note) It may well be that Farquharson is right in suspecting that the 'doctrine of the stress on the predicate' originated in R. Whately, *Elements of Logic*^{9} II, IV, par. 1, who also draws attention to verbal intonation and collocation, the last being ignored by Wilson. Further progress was made by Hermann Paul, *Prinzipien der Sprachgeschichte*, 1880, par. 173, and Henry Sweet, *A New English Grammar*, 1892–98, par. 81 ff. A recent discussion of practically all problems involved will be found in Manfred Sandmann, *Subject and Predicate*, Edinb. 1954.

My reasons for coming back to the well-known fact and the much-discussed problems are twofold. The fact itself continues to be disregarded by some logicians in their subject-predicate analysis of actual sentences. The questions connected with the fact have not, in my opinion, been satisfactorily answered so far from the point of view of modern structural linguistics.

Consequently, I shall first give a few examples of an approach to subject-predicate analysis in logic which I believe to be wrong because it is based upon wrong assumptions. I shall then proceed to make an attempt at giving a definition of the sentence, and a description of the means by which the distinction between logical subject and predicate may be made in a sentence, which are necessary to understand the difference between grammatical and logical subject and predicate, and which are satisfactory from the modern structuralistic point of view.

A conclusion of a more general kind will be that some problems, frequently discussed by logicians, are essentially linguistic problems, and cannot be solved without applying methods of linguistic analysis. ¹)

I. DEFINITIONS; THREE KINDS OF SUBJECT-PREDICATE ANALYSIS

In order to avoid misunderstanding, it seems desirable first to define the terms 'assertion' and 'sentence' in a preliminary way, in the sense in which they will be used in this article. The second part of the paper will present a fuller discussion, and more precise definitions.

By 'assertion' I mean a belief in the existence or non-existence of something expressed by means of symbols. The symbols under discussion here are (except when otherwise stated) symbols of a human language in the sense of a vocal language. By 'assertion' I thus mean a belief in the existence or non-existence of something expressed by

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¹) I want to express my sincere gratitude to Prof. J. Gordon Andison and Prof. Avrum Stroll of the University of British Columbia for valuable corrections and suggestions.

means of a sentence. 'Sentence' is defined here, in a preliminary way, as a combination of vocal symbols, consequently what is commonly called 'a spoken sentence'. (The term 'a written sentence' is a handy, but rather dangerous expression, because it tends to be misleading. What is called 'a written sentence' is the visual symbolization of a (spoken) sentence, by means of special visual symbols. In our sense of the term 'sentence', the expression 'a spoken sentence' is a pleonasm, and 'a non-spoken sentence' would be a contradiction).

The symbols of a human language, in the common sense of the term 'language', i.e. not including gesture languages, visual scripts, Braille script, etc., are vocal, consequently auditory symbols. These symbols fall into different classes: according to 1) form, and 2) meaning.

According to their form they fall into two classes: 1. words and word-groups, and 2. conventional types of sentence intonation. Examples of conventional sentence intonation in English are the 'falling tone' of the assertative, and the 'rising tone' of the interrogative sentence: *He is ready. He is ready?*

According to their meaning, they fall into three classes:
1. Referential symbols, by means of which the speaker refers to something; most words and word-groups belong to this class, e.g., *I, John, boy, milk, ręd, arrive.* 2. Attitudinal symbols, by means of which the speaker expresses what may be called an 'attitude' to something. Attitudes of the speaker to something, as expressed by means of vocal symbols, may be classified into a. 'emotional', expressed, for instance, by 'interjections', such as *alas*, and b. 'intellectual' attitudes, i.e. a belief in the existence or non-existence of something, expressed, for instance, by *yes* (i.e. 'I, speaker, believe it') and *no* (i.e. 'I, speaker, do not believe it'). 3. Symbols that are both referential and attitudinal. These may be single words, such as the vocative and the imperative in Latin (*Brute; ama*), and the finite verb in Latin (*amat*, i.e. 'I, speaker, believe that he loves'). They may also be word-groups of certain types, e.g., in Latin, *summum ius — summa iniuria; unus testis — nullus testis; beati possidentes*, and, in English, *he loves, I love, the king loves.* The attitudes of the speaker expressed by vocatives and imperatives are 'emotional', a wish to draw the hearer's attention (*Brute*), or that he do something (*ama*). The word-groups quoted, as *summum ius — summa iniuria* and *the king loves*, and the single finite verb in Latin, *amat, amas, amo*, express an intellectual attitude,

a belief of the speaker in the existence of something. This 'something' will be discussed below.

The preceding is intended to define and illustrate the concept 'assertion', and, in a preliminary way, 'sentence'. The sentence will be defined and discussed in more detail at the end of this article.

I make what I think is a common distinction between an assertion and a sentence, in the sense that:

1. A sentence may not contain an assertion: *Look! Mary! Alas!*

2. A sentence may contain more than an assertion; to give an example: the sentence *John died.* contains an assertion (unless it is spoken with some special, e.g. ironical, intonation), but *Poor John died.* contains more than an assertion, because it also expresses a personal attitude (of compassion) of the speaker to John, by means of the adjective *poor*. It may be noticed that *poor* is used here in an attitudinal sense, not in the sense of 'without money'.

3. Different sentences are said to contain the same assertion. They may belong to the same language, such as *John died.* and *It was John who died.*, or to different languages, such as *John died. Johannes mortuus est. Der Johann starb.*, etc.

An assertion has been defined above as a belief in the existence or non-existence of something (a belief expressed by means of symbols). This 'something' may be conceived — in terms of a given language — in two terms, something and something else (as in *John — died; the flowers — are red*), and it may not (as in *Pluit.*, or French *Il pleut.*, or English *It is raining.*)

Assumptions which, in my opinion, are wrong, are the following.

A. "The 'something' believed to exist or not exist, in an assertion, consequently expressed, in terms of a vocal human language, by a sentence, has always two 'terms', something and something else."

I shall not enter upon a discussion of this well-known topic, as it is not essential to what I actually wish to demonstrate. I merely wish to remark that, in my opinion, sentences such as *Pluit. Il pleut. Es regnet. It is raining. Es wird getanzt.* do not contain explicit reference to *two* somethings (assumed to exist), but only to one, namely a process, the process of raining, or dancing, which is affirmed to exist. *It* in *It is raining.* is adequately called by linguists (Etso Kruisinga) 'formal *it*', in order to indicate that it does not refer to anything.

B. The second assumption which I believe to be wrong is the following:

"If an assertion has two 'members', one of them is subject, and the other predicate."

'Predicate' is defined by P. T. Geach (*Subject and Predicate*, Mind 49, 461—482) as the part of the assertion that 'gives the assertion', whereas the other part, the 'subject', does not 'give the assertion'. At least this is the way I interprete his definitions:

"A *predicate* is the expression that gives an assertion about something if we attach it to another expression that stands for what we are making the assertion about.

"A *subject* (of an assertion) is an expression to which there is attached a predicate, so that the two together form an assertion about what the subject stands for".

As far as I see, Geach does not claim that an assertion always has or consists of a subject and a predicate, but he does not deny it either.

I hold that a subject and a predicate in this sense cannot be parts of an assertion as we have defined 'assertion' above. This point will be discussed later on.

C. A third, not uncommon, perhaps always tacit, assumption which I believe to be wrong is the following:

"One can undertake a subject-predicate analysis of a sentence without taking into account sentence form (i.e. what in languages such as English is usually called 'sentence intonation')".

I believe that on this tacit assumption is essentially based the statement that 'the same sentence', e.g. *Peter struck Malchus*, admits of more than one subject-predicate analysis. (See Geach, 1.1.) In doing so, Geach is not aware of the fact that he is talking about different (spoken) sentences, distinguishable by different intonation.

In my opinion, in such cases logicians, when using the term 'the same sentence', are very often actually talking about different sentences in what I shall call here the precise linguistic sense of the term 'sentence'. The difference, however, between such sentences — all of them ambiguously symbolized by the same series of letters, e.g. *Peter struck Malchus* — may actually be visually symbolized (in writing or print) by underlining (here: not-italicizing) as follows:

Peter struck Malchus.
Peter *struck Malchus.*
Peter struck *Malchus.*
Peter struck Malchus.

Peter *struck* Malchus.
Peter struck Malchus.
Peter struck *Malchus.*

On the precise linguistic definition of 'sentence' (i.e. a 'spoken sentence'), and other senses in which the term is used more loosely, see below.

D. The following is a fourth assumption which I believe to be wrong: "In the English sentence *John died.* the assertion is given by the expression *died*".

In order to test this assumption, we shall have to make a linguistic analysis of the sentence *John died.*, i.e. of a sentence actually spoken by a certain speaker in a given situation, visually symbolized — at least in one respect ambiguously — by the letters and punctuation mark (the period) *John died.*

The constituents of this sentence (I mean the 'spoken sentence' or 'sentences'), as of any other sentence, are 1. the word-content, and 2. the sentence intonation. The general type of intonation is clear from the punctuation, the period. It is the falling tone of the assertative sentence, different from the rising tone of *John died?* The specific type of intonation is not visually symbolized, as it might have been, for instance in *John died.* This, however, is not my point here. What matters here is the word-content.

The word-content is a word-group of a certain type, in English grammar called a 'clause'. It consists of two members called — in the purely grammatical or linguistic sense of the term — '(grammatical) subject' and '(grammatical) predicate'. Other examples of the same type of wordgroup are: *he — died, poor John — died yesterday, the king — loves, the flowers — are red, dogs — bark,* and, with reversed order of the members, *said — the king.* Each of these word-groups, except, perhaps, the last one (*said the king*), may be normally used as the whole word-content of a sentence. This is indicated in visual symbolization by a capital letter at the beginning, and some punctuation mark at the end: *He died. Poor John died yesterday? The flowers are red! Dogs bark.*

This type of word-group is defined as consisting of two members, one a pronoun in the subjective case (e.g. *he*) or an equivalent noun (*John*) or noun-group (*poor John*), the other a finite verb. This is our definition of 'a clause' in the technical sense in which the term is used in this article. The type is different from all other types of word-group in

English, such as *black dogs* or *barking dogs*, or such as *eat fish*, etc. One may notice also that some types of word-group are more commonly used as the whole word-content of a sentence than others. The types *John died* and *eat fish* are more commonly used this way than, e.g., *barking dogs*. The last may be used as the word-content of an 'answer-sentence', such as (What did you hear?) *Barking dogs*.

In the sentence *John died.*, which is a combination of word-content and intonation, both the word-content and the intonation have a semantic function of their own. Apart from the lexical meaning of the separate words, the semantic function of the word-group of this type, the 'clause', defined above, appears from the difference between *dogs bark*, which is a clause, and *barking dogs*, which is not a clause. The clause normally, or primarily, expresses a belief in the existence of something. In this respect it differs, e.g., from *barking dogs*, the semantic function of which is mere reference. The semantic function of the general type of intonation (symbolized by the period at the end) appears from the difference between *John died.*, *John died?*, and *John died!* In *John died.*, the function of word-content and intonation are about the same (we need not discuss the difference here), but in *John died?* there is, in a sense, a conflict between word-content and intonation, in which the function of the intonation predominates. The 'assertion', contained in the clause, is 'not actualized'. What is expressed by the sentence is not an assertion, a belief, but a question, i.e. a wish to hear an assertion.

This linguistic analysis was necessary to test the assumption that in the sentence *John died.* the word or 'expression' *died* 'gives the assertion'.

This is not the case. In order to realize this, it is helpful to compare Latin sentences such as *Johannes mortuus est.* and *Rex amat.* In these the finite verb actually 'gives the assertion'. This is proved by the omission test and by the substitution test.

The omission test shows that in Latin the pronoun or noun can be omitted without affecting the meaning of the rest of the sentence. *Mortuus est* and *Amat.* are syntactically complete sentences, whereas *Died.* and *Loves.* are not. Latin *Latrant.* ('They bark.') cannot be translated into English by *Bark*.

The substitution test shows that in Latin the pronoun or noun cannot only be 'left out', but it can also be replaced by an adjective, as in *Laetus amat. Laetus abiit. Sublimis abiit.*

The explanation lies in the fact that in Latin the ending of the finite verb, as in *veni-o, veni-s, veni-t, veni-unt,* represents a feature of the meaning of the word, whereas in English it has a purely syntactic function. From a certain point of view it is, in English, superfluous. In the present tense it occurs in the third person singular only: *I love, you love, he loves, we love, you love, they love.* Afrikaans Dutch has dropped it completely, and this loss does not cause any ambiguity. English has dropped all corresponding differences in the past tense: *I loved, you loved, he loved, we loved, you loved, they loved.* It is not at all improbable that, if English had not had an important literature for the last six centuries, it would either have dropped the *-s* of *he loves,* or used it for all persons, singular and plural (cf. dialectal or vulgar *I walks*). It may also be noticed that exactly the same form *love* is also used for a command, as 'imperative', *Love!,* and even simply to refer to the process of loving, as 'infinitive'. Whereas Latin *Ambulo. Ambulas. Ambulat. Ambulamus.,* etc., make perfect assertative sentences, English *Walk.* and *Walks.* do not. In linguistic terminology we would say that *walk* and *walks* have no difference of meaning, but only difference in 'valence' or 'distribution'.

This kind of ending, i.e. without meaning, but with a definite syntactic function, is not uncommon in certain types of languages. One may compare German *grosse* and *grosser* in *der grosse Mann* and *ein grosser Mann.* The different forms are said to be 'in complementary distribution' without difference in meaning. Cf. English *a* before consonants, and *an* before vowels: *a man, an animal.*

The Latin type of word-group *rex amat* and the English type *the king loves* belong to different classes of word-groups. In *rex amat* the word *rex* is a syntactically omissible adjunct to the finite verb, the group is 'adjunctive'. In English neither *the king* nor *loves* can be syntactically omitted, the group is 'conjunctive'. (A third class on this level of classification is the 'coordinative' group, from which each member in turn can be omitted: *Men, women, children* (*cried*)).

I fail to see that — in the sense in which the terms are defined by Geach — the sentence *John died,* or *The flowers are red,* or *Peter struck Malchus,* contains a subject and a predicate. The 'expression that gives the assertion' is the whole sentence, not a part of it. Expressing an assertion is a function both of this type of word-group (the clause) and this type of intonation (the 'falling tone' of the assertative sentence), or, better, of the combination of one with the other.

If, however, we take sentences such as *Peter struck Malchus*, *Peter struck Malchus*, *Malchus was struck by Peter*, *The flowers are red*, *Red are the flowers*, or:

We went to Paris in January.
In January we went to Paris.
or: *So I did. So did I.*

there is a difference between parts or elements of the sentence, 'expressions', which may be called a difference between subject and predicate, but in a completely different sense. This difference is sometimes referred to by saying that, for instance, in

Columbus discovered America.

something is 'told about' Columbus' discovery or discoveries, but in

Columbus discovered America

something about the discovery of America. This does not mean, of course, that in the former sentence 'the assertion is given by' *America*. or in the latter by *Columbus*. The assertion in both cases is given by the combination of a clause with assertative intonation, falling tone. The difference between the two sentences is expressed by a different kind of intonation, namely high pitch on one or more words of the sentence (often wrongly called 'stress'; 'emphasis' is better, but vague), in script symbolized by underlining, or here by space between letters.

This difference, between subject and predicate in this sense, is not part or feature of the assertion (as defined at the beginning of this article), because the belief expressed is about the same something in, for instance, *We went to Paris in January* and in *In January we went to Paris*, or in the two assertative sentences about Columbus and America. The point is that the sentences contain or express more than a mere assertion of a belief. In addition to the assertion, the speaker — by means of special features of the sentence intonation — expresses a different attitude to the 'relation' affirmed, or, better, to other relations.

This is sometimes expressed by saying that

Columbus discovered America

is, or may be, in a given speech situation, used as an answer to the question

Who discovered America?
or *Who was it who discovered America?*
but that *Columbus discovered America*

is or may be used as an answer to the question

What did Columbus discover?

This difference actually expresses a different attitude of the speaker — in the given speech situation — to two different sets of relations, one set in the existence or non-existence of which he is interested (perhaps because his partner in the dialogue has expressed such an interest by asking a question), and another set of relations in the existence or non-existence of which he is not interested. In

Columbus discovered America

he expresses — not implicitly, but really explicitly — his interest in a set of relations, namely those between Columbus's discovery or discoveries on the one hand, and different countries (objects of existing or non-existing discoveries) on the other. In

Columbus discovered America

he expresses his interest in a different set of relations, namely those between the discovery of America on the one hand, and different persons on the other.

Consequently, the difference between *Columbus discovered America* and *Columbus discovered America* has nothing to do with the content or object of the belief expressed: the relation and the terms of the relation are exactly the same. Nor has it anything to do with the means by which the assertion is given: the assertion is not given by a part of the sentence, an 'expression' in the sentence, but by the same means in both cases: the clause and intonation.

My point is first, that, this distinction between subject and predicate in this sense (something 'told about' something else) is not part or feature of the assertion, but of the sentence; second, that it is a real feature of the sentences quoted; and, third, that not all sentences express this distinction, this special attitude to a special set of relations. This is what I shall try to prove next.

The use of italics or space for the purpose of expressing 'emphasis', i.e. what I have called 'specific intonation', as in *Peter struck Malchus* or *Peter struck Malchus* is not compulsory in English script, and not even encouraged in schools. One of the results is that the series of letters and punctuation mark(s) *Peter struck Malchus.* ambiguously symbolizes different kinds of sentences: *Peter struck Malchus. Peter struck Malchus.* etc. The ambiguity may be eliminated by the context, e.g. in the dialogue of a short story:

I asked him, "Who struck Malchus?", and he said, "Peter struck Malchus".

There may, however, be a real ambiguity, if the words occur as the very beginning of a story, or as an example discussed in a logical treatise. This may have serious consequences with regard to a certain kind of subject-predicate analysis of a sentence.

I have discussed the terms 'subject' and 'predicate' in three different senses. One as purely grammatical terms. Another as they are defined by Geach. A third which I may loosely refer to by saying that the predicate 'tells something about' the subject. We are concerned with the third here, but, in order to avoid misunderstandings, I wish to point out that 'grammatical' subject and predicate are defined solely in terms of parts of speech. If we say that in the clause *he died* the first member of the clause is subject, this grammatical subject is defined as the member of the word-group that contains a pronoun in the subjective case, or its equivalent, usually a noun, *John died*, or a noun-group, *the old king died*. Similarly, the grammatical predicate is defined (I am talking about English) as the member of the clause which contains the finite verb.

It is obvious that not all sentences admit of a grammatical subject-predicate analysis, e.g. not: *Alas! Yes. John! Look! The more the merrier. What about Mr. Smith?*

I have already pointed out that none of the various sentences symbolized by the 'written sentence' *Peter struck Malchus.* can be said to contain a subject and a predicate in the sense in which the terms are defined by Geach.

We may, however, attempt to apply a subject-predicate analysis in the third sense (something told about something else, as in *Peter struck Malchus.*). This analysis can be successfully applied, as has been illustrated above, if there is emphasis on one or more words of the sentence unambiguously shown by italics (or, in other cases, by the context): *Columbus discovered America*, *Peter struck Malchus.* My point here is that, normally, there is no such analysis applicable, if there is no such emphasis in the sentence.

As the use of italics in English script is not compulsory, and not very common (it is actually rare), a series of letters and period such as *Peter struck Malchus.* not only does not indicate what we have called specific intonation, or emphasis, but it does not even indicate whether or not there *is* emphasis (on one or more words). My point here is that there are sentences without such emphasis. In that case there is no subject and no predicate in the third sense of the terms, and a subject-predicate analysis in this sense is not applicable.

In fact, the 'written sentence' *Peter struck Malchus.* symbolizes various kinds of spoken sentences: (A) in which the speaker does not express any interest and non-interest in the existence of two sets of relations, and (B) in which he expresses-explicitly-such an interest. In the following examples I shall indicate general sentence intonation in terms of a high and a low pitch-point in a syllable (ʹhigh, ˋlow), and special intonation by space between the letters of the emphasized word(s).

(A) *Péter struck Màlchus.*
(B) 1. *Pétèr struck Malchus.*
    2. *Peter struck Málchùs.*
    3. *Péter strùck Malchus.*
    4. Etcetera.

The example under (A) has no emphasis, no special intonation. This sentence does not tell something about something, it just affirms the existence (in the past) of a 'fact', conceived, as usual, as consisting of two terms, or as a 'relation' existing between two terms. A subject-predicate analysis in the third sense of the terms is not applicable here, whereas in the examples under (B) it is. If the visual symbolization does not comprise symbolization of emphasis, there are two possibilities: either the sentence that is symbolized does not admit of this sort of analysis, because it does not contain a part or term that tells something about the referent of the other part or term; or we simply cannot apply the analysis, because the visual symbolization is incomplete, i.e. ambiguous.

We cannot enter upon a full discussion of this subject here. It would comprise also other types of sentences, with a different grammatical structure of the word-content, such as, in English, *Peter, he struck Malchus. It was Peter who struck Malchus.*, with various types of intonation.

II. THE SENTENCE. CONCLUSIONS

In the preceding part of this article I have discussed subject-predicate analysis, starting from a distinction between three kinds of subject-predicate analysis. In what follows I shall approach the same problems from a different angle, starting from analysis and definition of the concept of a sentence. This procedure will, I think, enable us to clarify a few points touched upon what has preceded, and also allow us to draw certain conclusions of a more general nature.

The term 'sentence' is often used in a loose way, without definition; this rarely leads to actual ambiguities in discussion.

There are, however, situations in which it is highly desirable to define the term in an exact way. Subject-predicate analysis is one of them. In the following I shall try to simplify a complicated, and to clarify what may seem to be a confusing, problem.

In the preceding I have used the expression "the precise linguistic use of the term 'sentence' ". What I meant is perhaps better expressed by calling it the *basic* sense of the term, and all other senses in which it is used in linguistics and logic *derivative*. I call the former 'basic', because all other senses presuppose the existence of what is referred to by the word in its basic sense, and can be defined only in terms of this basic sense. The basic sense is what is usually called 'a spoken sentence'.

To avoid misunderstandings, I shall first give a few examples of what I mean by a spoken sentence.

Oh!
Alas!
Yes.
No.
No?
John!
John?
John.
Poor John!
Look.
Look here.
John died.
John died?
John and Peter died.
Poor John died yesterday.
John died, but Peter is still alive.
The more the merrier.

As I am talking about spoken sentences, the above series of letters and punctuation marks are intended to refer to words or series of words actually spoken with a certain distinctive intonation by a given speaker at a given time and place in a given situation. This remark may already have given a fairly complete picture of the essential constituents of a sentence, and its necessary implications. For the purpose of defining it, we have to break down the sentence into its constituents. These constituents are symbols, belonging to a given language. A symbol is defined as a unit of form and meaning. Consequently, we can classify the constituents of a sentence in at least two different ways: according to the form of the symbols, and according to the meaning of the symbols. The two classifications are equally important, and supplement each other. They have already been applied on page 303 and 304 of this article.

From the point of view of the form of the symbols, we observe that a sentence has always one or more words, and a definite intonation. We may speak of two levels or strata of form, the level of the word-content, and the level of the intonation.

From the point of view of the meaning of the symbols, we observe that, in a sentence, the speaker always combines a symbol or symbols that refer to something, with a symbol or symbols that express an attitude to something. Consequently, we may speak of two levels of strata of meaning, the level of reference, and the level of the expression of an attitude.

The terms 'reference' and 'attitude' require some comment.

It is a well-known fact that reference can be made in two different ways, by 'naming' or 'mentioning', as by the word *John*, or *boy*, and by 'pointing at', as by *he* or *that*. This distinction does not affect my argument. It may also be noticed that, in a sentence, the reference is not always explicit, but may be implicit, as in *Alas!* This is, normally, the case with all sentences of which the whole word-content is an 'interjection', such as *Alas! Oh! Ah! Phew! Bah!*, or *Yes. No.* This distinction does not affect my argument either, provided we understand 'reference' in the broad sense of 'explicit or implicit reference'.

I think that the term 'attitude' does not require a more exact definition than is given by saying that the attitude (of the speaker to something) is either emotional or intellectual, and that by an intellectual attitude we mean a belief in the existence of something. It is obvious that the logician as such is more directly interested only in sentences that express an intellectual attitude, and not, for instance, in sentences such as *Alas! Mary! Look! Who did it?*, and also not in expressions that convey emotional attitudes in an otherwise 'intellectual' or 'affirmative' sentence, such as the expression *poor* in *Poor John died*.

We further observe that there is a close, but incomplete parallelism between the form-levels and the meaning-levels of the sentence. As has already been pointed out on pages 303 and 304, there is a division of function in the sense that words are referential and/or attitudinal, but intonation is normally attitudinal and not referential. We also observe, by linguistic analysis, that in some languages an intellectual attitude may not be expressed by a single word, but by a word-group of a certain type, e.g., in English, *he died*.

Linguistic analysis of a sentence comprises the breaking down of the word-content and the intonation-content of the sentence into their constituents, and classifying them. Analysis of the word-content leads to the distinction of various types of word-group (we have already mentioned the distinction into conjunctive, adjunctive, and coordinative groups), types of members of word-groups (the so-called 'parts of the sentence'), and classes of single words (the co-called 'parts of speech'). Analysis of the intonation-content leads, at least in English, to the distinction of two functions or levels of intonation, referred to in the preceding by the terms 'general' and 'specific' intonation.

One of the most important points in *defining what is meant by a sentence* is, in my opinion, the observation that it always contains both the expression of an attitude, and (explicit or implicit) reference, and that it always consists of both a word or words, and meaningful conventional intonation. Thus we may say that a sentence is "a combination of one or more words with distinctive intonation for the purpose of expressing an attitude of the speaker to something".

Conclusions

The preceding analysis and definition of the sentence, from the linguistic point of view, throw some light upon three problems of logic, discussed in the first part of this article: the definition of 'assertion', the subject-predicate analysis applied by Geach, and the subject-predicate analysis in a different sense (indicated by saying that something is 'told about' something else). The reason that they are able to throw light upon problems of logic is, if I am not mistaken, that these problem are not only problems of logical, but also of linguistic analysis, and that, in the last resort, they actually resolve themselves into purely linguistic problems. I shall try to illustrate this by briefly discussing each of the three questions separately from this angle.

1. The definition of 'assertion'

The definition of 'assertion' actually boils down to an exact distinction between assertion and sentence.

By 'assertion' we do not mean 'the expression of a belief' in the existence of something by means of symbols. If this were the case, assertion would be identical with 'assertative sentence', or, at least, some assertative sentences, such as *John died.* and *Der Johannes starb.* would be assertions.

What we actually mean by 'assertion', is 'a belief expressed' by means of symbols. If this is what we mean, *there is no assertion if there is no sentence*, or the equivalent of a sentence. By 'equivalent of a sentence' we simply mean anything that falls under the definition of sentence without limiting the symbols to symbols of a vocal human language. The definition of sentence in this broader sense would be about the following: "the expression of an attitude to something by means of symbols". The attitude expressed, more especially an attitude of belief, is the assertion. This belief necessarily implies something that is believed (to exist or not to exist).

All formulas of this kind, for instance in symbolic logic, fall under this broader definition of sentence, i.e. formulas of the kind *Dogs bark.* (a statement), not *barking dogs* (pure reference).

It may well be that a belief in the existence of something can occur without a sentence, and it may be that it can occur without thought in terms of symbols, but I fail to see how such a belief can be expressed except by means of a sentence, or its equivalent as defined above.

There are, however, different kinds of sentences. There are sentences which express an attitude that is not a belief (*Alas! Mary! Look! Who did it?*), and others which express a belief plus some other attitude (*Poor John died.*).

The difference between a sentence and an assertion, then, is that a sentence is a means of expressing an attitude of the speaker to something and an assertion is such an attitude, especially of belief, expressed by means of a sentence.

The attitude of belief *eo ipso* implies that something is believed. This something is usually explicitly referred to in the sentence, but not always, because it may be understood from the speech-situation (*Yes. No.*). The sentence may also express a degree of certainty of the belief, by words (*certainly*, *probably*, etc.) and/or intonation (of certainty or doubt).

2. The subject-predicate analysis by Geach

It has been shown that this analysis resolves itself into the problem of determining by means of which part or element of the sentence 'the assertion is given'. This also is a purely linguistic problem. We have tried to show that some light can be thrown upon it by the distinction between conjunctive and adjunctive word-groups, from which it follows that the assertion is not always given by a part of the sentence. We also concluded that this kind of subject and predicate are not features or elements of an assertion, so that no assertion admits of an analysis of this kind.

3. The subject-predicate analysis 'something told about something'

This question also resolves itself into a purely linguistic problem: by means of what elements or features of a given sentence is something 'told about' something?

This proved to be, in English, a special kind of sentence intonation, a certain use of high pitch. Our conclusion was that not all English sentences admit of this kind of analysis, and that it can usually only be applied if we know more about the intonation of a given sentence than is usually expressed by the visual symbolization in script.

Note on visual symbolization

I finally want to make a few very brief remarks on what is ordinarily termed the 'written sentence', and the visual symbolization of sentences in English.

In English script, the symbolization of the word-content is fairly complete, and serves most practical purposes. Separate words, it is true, are not always accurately distinguished in a scientific way (one has only to think of the hyphen: "The chaos prevailing among writers or printers or both regarding the use of hyphens is discreditable to English education." (H. W. Fowler, *Dictionary of Modern English*

Usage); the representation of sounds is freakish; word-accent is never indicated. All this, however, hardly ever creates any real ambiguity.

The representation of sentence form, including intonation, is less complete. It is very good on the general level of intonation, the essential distinctions being made by period, question mark, and exclamation mark. It is much less complete, occasionally ambiguous, on the specific level, i.e. the level, so to speak, of italics. It rarely includes other intonational features (an example is the series of periods in *But he . . . just disappeared.*), and, more especially, rarely expresses shades of certainty and uncertainty (something of the kind is expressed in *Is that true???*).

The term 'sentence' is often used in the derivative sense of 'written sentence', i.e. what a series of letters with punctuation mark or marks refers to. These letters and punctuation refer to *some* features of an imaginary spoken sentence. The role of the visual symbols is comparable, at least in some respects, to that of a sketch of a tree in an article on trees. The sketch symbolizes, or represents, some features of an imaginary tree.

For many kinds of discussions, especially logical discussions, it does not matter whether we talk about a real sentence, or about a combination of features of an imaginary sentence, because other features are irrelevant for the purpose of the discussion. It is often completely irrelevant what the non-symbolized features of intonation are or might be. This is as irrelevant as who are speaker and hearer, at what time and place, and in what situation the sentence is supposed to be spoken. What usually matters is only what is symbolized: the word-content (by means of letters and spaces between letters), and the sentence form on the level that is represented by a capital letter at the beginning, and some heavy punctuation mark at the end (*.?!*). Only when linguistic analysis is necessary, may the incompleteness on the specific level of intonation present a problem (as has been shown above). Other features of intonation are hardly ever relevant, because, in English, they seem to be used only for the expression of a degree of certainty of belief: shades between absolute certainty and considerable doubt.

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E ‘INSTABLE’ — NOTE TERMINOLOGIQUE

La terminologie linguistique actuelle est par trop riche et, ce qui pis est, parfois même flottante. C’est le résultat non seulement de la manie d’innover des termes linguistiques, caractérisant certains auteurs qui croient rehausser de la sorte l’originalité de leurs ouvrages, mais surtout la conséquence logique et inévitable du développement et des progrès de la linguistique. Si l’on trouve un autre point de vue qui permet de mieux comprendre et expliquer un problème, parfois la terminologie actuelle ne convient pas à la conception nouvelle et il faut donc inventer des termes plus convenables et mieux appropriés. C’est aussi le cas de l’ə.

D’excellents phonéticiens et romanistes ont traité la réalisation de l’ə, mais ils ne sont tombés d’accord ni sur leurs opinions et sur le résultat de leurs enquêtes ni sur la dénomination de ce son.

Les termes ‘sourd’ et ‘neutre’ ne sont pas heureux pour les cas où l’ə n’existe plus dans la prononciation (*lune*), ‘muet’, au contraire, là, où il est prononcé. La dénomination ‘féminin’ convient moins encore, car l’ə final figure dans maints substantifs masculins et dans la forme masculine de nombreux adjectifs. Les expressions ‘caduc’, ‘mobile’ et ‘instable’ sont également impropres pour désigner les ə prononcés en tous cas (*gredin*) que ceux que l’on ne prononce jamais (*plume*).

Cette multiplicité de termes désignant l’ə est encombrante, mais elle peut servir du point de départ pour la solution du problème en question.

Dans toutes les langues, on s’est servi de synonymes (et plus encore des formes doubles d’un seul et même mot) pour distinguer les notions (phénomènes, êtres, actions, qualités, etc.) semblables, mais pas tout à fait identiques. Voilà la solution qui se prête même à résoudre la dénomination de l’ə.

Il faut souligner le fait que l’ə ne représente pas un seul et même type du son. Sans parler de la différence entre l’ə atone et l’ə tonique (*faites-le*), qui existe d’ailleurs pour toutes les voyelles, il y a trois variantes de ce son:

1. l’ə que l’on prononce toujours (surtout dans les syllabes où il est précédé de deux consonnes: *quelquefois*, *Grenade*, *Grenoble*, *crever*, *écrevisse*, etc.).

2. l'ə qui, selon l'entourage du mot, est prononcé (*une petite maison*) ou non (*la petite maison*).

3. l'ə que l'on ne prononce jamais (à la fin des mots: *robe, cave, porte,* etc.), excepté la prononciation archaïque de la récitation et du chant et sauf les cas de la réintroduction de l'ə, réalisée pour éviter la rencontre de trois consonnes.

Pour la première variante, je propose le terme 'sourd' (le son de cet ə est en effet sourd, peu sonore, étouffé), pour la deuxième — 'instable' (cet ə ne garde pas toujours sa place), pour la troisième — 'muet' (on ne l'entend pas, car il s'est amui pendant l'évolution du français).

La terminologie proposée — plus précise et plus logique que l'actuelle — serait avantageuse même du point de vue méthodique pour l'étude de la prononciation du français par les étrangers.

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REVIEWS — COMPTES-RENDUS

D. Jones, *An Outline of English Phonetics*. 8th ed. (re-set), W. Heffer & Sons, Cambridge, 1956.

Unlike previous editions of this standard work on English phonetics the present edition has been set and printed in England. Although its outward appearance has definitely changed for the better in the process I cannot help feeling that the illustrations might have been brought a little more up to date.

Now it would be wrong to judge Jones' work solely from the point of view of structural linguistics, since the criteria of this branch of linguistic science simply do not tally with those of practical phonetics which Jones has explicitly made his working ground. In fact, he seems to be hardly aware of affording linguists with a great deal of material that might prove useful to them [1]. Prof. Jones is not only a pioneer in his own chosen field, whose pronouncements in matters concerning English phonetics have put him unwittingly, and I am sure unwillingly, into a neo-pythagorean position in which his word seems law – particularly on the Continent of Europe – but he is also exemplary in the meticulousness with which he checks up on his findings from time to time, resulting in the present revised form of the book using the information he himself has collected as well as data provided by men many times his juniors. His outlook is inveterately undogmatic and his opinions – couched as they are in easily understandable words – exude a moderation of tone characteristic of a personal modesty which seems to be the only extreme to which he will allow himself to go.

Entirely new items are a chapter (XXXII) on 'Syllable Division' (juncture) and a long Appendix (A) on 'Types of Phonetic Transcription'; the Appendix on 'American Pronunciation' (D), introduced for the first time in the 7th edition, now appears in a modified and expanded form.

The book has always been intended to be used by foreign learners in the first place and as such has kept up its reputation of being the most authoritative book on the subject. But serious students of the English language should not be left almost completely unaware of developments in linguistic as well as phonetic science on having completed the book, although, of course, this result must be wholly unintentional on the author's part. I for one find the preponderance of articulatory factors over possible other factors somewhat difficult to accept, particularly with regard to a class-room situation involving attempts to teach English sounds to foreign learners. In fact, phonetic transcription which seems to be Jones' main preoccupation throughout this and other books is postulated as being the main support in acquiring the proper pronunciation of Standard English. But one may well wonder if the difficulties involved in perceiving correctly should not receive more attention than is now allotted to them. Of recent times, above all in most of the work done in the field of foreign language teaching in the United States ²) the basic assumption is that good results can only be hoped for after having made the foreign learner aware of the predictable mistakes in perception due to habitual responses to significant differences of sounds and prosodic attributes in his native language. Jones explicitly states in Appendix A on 'Phonetic Transcription': "My experience does not support the theory held by some that a study of the mother tongue is a useful preliminary to acquiring the pronunciation of a foreign language" (p. 344, note 24). This rather alarming statement, coming from a man who has been active in the field of foreign language teaching and based on such a vast and intensive experience cannot be easily disregarded. Yet I cannot help feeling that an exposure to just the sort of thing Jones readily dispenses with, viz. a briefing in the basic problems involved in the process of learning a foreign language makes the whole process much more interesting, presenting as it does a stimulating challenge to the foreign learner. From a pedagogical point of view, taking one's pupils as it were into one's confidence would seem to take off the edge of what might otherwise be a gruelling process of merely drilling the correct pronunciation into them.

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[1] It is my considered opinion that the author's *The Phoneme, its Nature and Use* will prove to be a veritable hoard of linguistic treasures to be unearthed by linguists possessing a catholic taste.

Thus, points concerning theory cannot be completely excluded even in a book of this nature and, in fact, the basic concept of the phoneme, with which Jones has familiarised more than one generation

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²) Notably in the English Language Institute of the University of Michigan and in the School for Foreign Service, Washington D.C.

of students of English, inevitably focuses the linguist's attention to his work. The 'familiar' description of a phoneme as "a family of sounds consisting of an important sound of the language (i.e. the most frequently used member of that family) together with other related sounds which takes its place in particular sound sequences" (§ 191) is now expanded to read in addition: "or under particular conditions of length and stress".

Several vaguenesses could be pointed out in this, as for instance the notion of "related" which must presumably be taken to mean some sort of phonetic similarity from an articulatory point of view. "The most frequently used member" seems to refer to the existence of an identifiable allophone within the allophonic range of every single phoneme which plays a predominant part, although it may be an invidious task to find such an allophone in every single case. For one thing, there may be cases in which there seems to be only one single 'member' as for instance in the affricates [tr] and [dr] 3).

For another, as in [b, d, g, v, z] which are devoiced initially and finally one would have to find out whether occurrences in these positions really predominate over those medially.

If we adhere to this view of the phoneme as a family of sounds it might be more consistent to rename what Jones calls a diaphone (i.e. "a sound used by one group of speakers together with other sounds which replace it consistently in the pronunciation of other speakers" (§ 204) a 'diaphoneme' since it likewise consists of different members, which could then conveniently be called diaphones, just as the members of a phoneme are usually called 'allophones' in the literature. In the chapter on diphthongs (XV) allowance is now made for the existence of rising diphthongs [ĭə, ŭə, ŭi], i.e. such in which the end part has greater prominence than the beginning part (§ 466 c) 4) as compared with the much more frequent falling diphthongs such as [ei, ai, au] etc. 5).

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3) There is every reason to doubt the phonemic status of these and similar affricates such as [ts] in British English.

4) In § 466 (numbering of paragraphs has been made to coincide with that of previous editions, added paragraphs being indicated by small lettering a, b, c, etc.).

5) A more elaborate treatment with profuse material can be found in the same author's *Falling and Rising Diphthongs*, Misc. Phon. II. 1954.

Although the evidence seems to be rather confusing, the inevitable conclusion is that British usage allows for a very wide margin of variant forms and no hard and fast rules can be laid down for them.

Another new feature in this edition is the chapter on 'Syllable Division' (XXXII). Distinctions of length are taken to be decisive in word pairs like *toestrap*, with a fully long [ou] and a voiceless affricate [tr] as compared with *toast rack* with a fairly short [ou] and a fully voiced [r] (§ 1092). This situation seems to call for the notion of 'chroneme', a significant feature of length, which is only mentioned parenthetically in this book but which finds much fuller treatment in the author's *The Phoneme, its Nature and Use* [6]).

This feature of relevant length implicitly plays a large part in Jones' work as can be seen from his treatment of the so-called long vowels, in which length is held to be the distinguishing mark, brought out in his transcription of the vowels in *team* [iː], *too* [uː], *ball* [ɔː] etc. The [iː], for instance, is said to belong to the same phoneme as the [i] in *tin* and distinguished from it by the chroneme [ː]. The concept of the chroneme may be rather hard to grasp from the scanty treatment it receives in this book. It is mentioned for the first time in this edition (§ 865), as a passing reference to the much fuller treatment is receives in *The Phoneme, etc.*

With his usual readiness to allow for a different interpretation Jones makes allowance for the possibility (whenever he is aware of its existence) that, in his own words, "a new development is beginning to take place by which the present distinctions of quantity combined with quality will eventually give place to distinctions of quality only". This would in the end necessitate the adoption of special symbols for the so-called short vowels such as [ɩ, ʋ] to distinguish them from [i, u] respectively (§ 879). An experimental analysis which seems to support the latter view as being closer to the phonetic facts was reported by A. C. Gimson [7]).

As for recent advances in instrumental research, bare mention is now made by name only of such instruments as cathode-ray oscillographs and spectographs, whereas the many references to the palatogram have remained the same as in previous editions and are used throughout the book to illustrate the articulations of individual sounds.

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[6]) Heffer, Cambridge, 1950.

[7]) A. C. Gimson: *Implications of the Phonemic/Chronemic Grouping of English Vowels*, Acta Linguistica, V, 1945–49, p. 94–100.

The advantage of describing the use of rather simple instrumental aids which are – for that reason – cheap and easily made available in a book on English phonetics is obvious. At some points, though, the unfortunate impression is created that the available methods to register the differences between voiced and breathed sounds are still rather unreliable (p. 22, note 4) where specific mention might have been made of the lower bar in spectograms which appears very clearly when voice is used. The whole question of whether the distinction between voiced and voiceless pairs in English such as [p/b, t/d, f/v] etc. is really carried by the presence or absence of voice or by fortis v. lenis articulation is bound to get a thorough overhaul in the light of results to be obtained by newer and more reliable measuring instruments.

Mention should be made of one rather important alteration in the chapter on 'Stress' (XXIX) where this phenomenon is said to be independent of length and intonation (pitch). In a note (p. 246) the existence of a contrary view is acknowledged but at the same time rejected. It is my contention that welcome as this addition may be as proof of the existence of other views, it entails a serious drawback in that it will leave the user of the book completely unprepared for his discovering subsequently that there is a vast literature regarding some problems that are not even treated as such in the present form of the *Outline*. The alternative would be ruthlessly to avoid any discussion of rival views. When this policy is not carried out consistently it might easily give rise to the mistaken impression that, where no mention is made of other interpretations, none such exist, as is notably the case with Jones' treatment of the phoneme.

In the same chapter (XXIX) a former differentiation of five degrees of stress in words like ^{2}*op*^{4}*por*^{1}*tu*^{5}*ni*^{3}*ty* is now reduced to two workable ones, stressed and unstressed.

Finally, there is a much more elaborate and interesting appendix of 20 pages (instead of a single one in previous editions) on 'Types of Phonetic Transcription'.

In conclusion, although it may seem rather superfluous to all who have been working with the *Outline* either as students or as teachers, it should be stated that it is still by far the most exhaustive and reliable authoritative guide in the field of English phonetics. The present 8th edition in its improved form both typographically and thanks to its textual alterations and additions is therefore all the more welcome.

's-Gravenhage A. Cohen

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